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ABSTRACT

This report reviews, recounts, and assesses the accomplishments and progress made to date by many public health professionals engaged collectively in a nationwide health education-risk reduction program. Papers are presented outlining progress by health agencies, working alone or in collaboration, whose basic goals were: (1) inventory of statewide resources for health education-risk reduction; (2) establishment of working relationships with other agencies; (3) determining risk factor prevalence by State; (4) identifying surveillance systems for chronic disease morbidity and mortality data; and (5) pursuing an organized approach to risk reduction. These have proved effective for stimulating new networks, new interventions, and new thinking for addressing the preventable health problems of the 1980's and 1990's. The local education intervention projects described are demonstrating the effectiveness of a planned community approach to risk reduction. (JD)

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REPORT OF THE HEALTH EDUCATION–RISK REDUCTION CONFERENCE
ANAHEIM, CALIFORNIA, OCTOBER 27-30, 1981

1983

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
Center for Health Promotion and Education
Atlanta, Georgia 30333

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control

Memorandum

Date JAN 19 1983

From Director
Centers for Disease Control

Subject Report of the Health Education-Risk Reduction Conference
Anaheim, California
October 27-30, 1981

To Conference Participants

The following is a report of the Anaheim Health Education-Risk Reduction Conference cosponsored by the Centers for Disease Control (CDC) and the Conference of State and Territorial Directors of Public Health Education. The report provides an opportunity to review, recount, and assess accomplishments and progress made to date by many public health professionals engaged collectively in this nationwide program.

The basic goals of the original State grants in 1979 were to inventory statewide resources for health education-risk reduction; to establish working relationships with other agencies; to determine risk factor prevalence by State; to identify or establish surveillance systems for chronic disease morbidity and mortality data; and to pursue an organized approach to risk reduction. These have proved effective for stimulating new networks, new interventions, and new thinking for addressing the preventable health problems of the 1980's and 1990's. The local education intervention projects are demonstrating the effectiveness of a planned community approach to risk reduction.

I am especially pleased that so many of these projects have recently competed successfully under the Prevention and Preventive Health Services Block Grant or otherwise generated local revenues to support their activities during the coming year. CDC will continue to provide technical assistance in health education/risk reduction. We will seek every opportunity to encourage others to join us in support of these primary prevention programs.

Thank you for your continued efforts towards making this a Nation of healthy people.

William H. Foege

William H. Foege, M.D.
Assistant Surgeon General

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I. INTRODUCTION

The Beginning and Current Status of the Health Education-Risk Reduction Program

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As an ingenious way of getting the boss on the program where he can do the least harm, David Ramsey and his conference planners have asked me to review, in effect, where we came from and how we got here—in health education and risk reduction—past and present. The future, I notice, is significantly omitted from that, and rightly so, in a way, because you in this room and the people you're working with will have a lot to do with shaping that future. We will have a better feeling as to where we are going, I think, when these 3 days are over. The problem with this assignment is that for some of you, who have been subjected to Ogden rhetoric in the past at assorted gatherings of the tribe, this will represent a fairly familiar song. It had been said that I have one very good speech, so those of you who have heard it before will just have to bear with me. The majority of you, however, have been spared in the past; so you are now going to be subjected to Ogden 101, for about the next 15 minutes.

I have been trampling around the circuit ever since the formation of the Bureau of Health Education at the Center for Disease Control (CDC)* in 1974; over the melting sherbet, I have given talks that were generally entitled something like "Federal Initiatives in Health Education." Last week in Virginia, Linda Redman, who is one of your colleagues and who is here today, asked me to talk down Federal initiative and talk up national concerns in health education. I think the distinction between the concepts of Federal and national is a very apt one at the moment.

For nearly half a century those of us who have worked in the Federal establishment and, in fact, those of us who have labored in health and social welfare generally have found it relatively easy to use the words *Federal* and *national* interchangeably. People like me have been especially susceptible to the beguiling notion that the Federal initiatives really are national initiatives and Federal concerns are truly national concerns. This has sometimes led us into the still more serious delusion, of course, that what we say to each other in memoranda is more important than what actually happens out in the States and communities. This is patently untrue. It is especially untrue in a field like health education. Health education happens or doesn't in families, schools, neighborhoods, communities, and worksites. Anything we can do from the Federal level, which is several steps removed from this reality, is useful only to the extent that it enhances what happens where the people are.

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*Effective October 14, 1980, the Center for Disease Control became the Centers for Disease Control and the Bureau of Health Education became one of the three divisions of the new Center for Health Promotion and Education.

It's hardly a hot news break for me to announce that we are at a dramatic turning point right now in regard to the role of the Federal Government in social change. It's rather remarkable that, since 1933—which is 48 years and two full professional generations ago—the primary engine driving social change in this country has been funding programs from the Federal Government, i.e., those Federal initiatives that I've been blathering about to all of you all these years. Now, for good or ill and like it or not, for how short or long I don't think any of us can foresee at the moment, that situation has changed. But one might assume that those Federal initiatives that have really corresponded to national concerns will prosper. And if this is really true, I am optimistic at the moment about the future of health education, even during the rather different epoch of Federal support that we seem to be entering.

I really believe there has been a national concern for educating people about health that predated Federal initiatives by many years and probably will survive them by many years. This interest in the promotion of better health through individual choice has been fueled by a number of popular movements. The consumer movement has dramatized the idea that people really are entitled to an informed choice as to the products and services that they buy. The environmental movement has stressed the concept that "quality of life" should provide opportunities to enjoy a healthful lifestyle. The women's rights movement was really the generator of self-care as a supplement to—and, at times, even a substitute for—medical care practices that were perceived to be insensitive and inappropriate.

I think that health education and health promotion have been at the point of confluence of all these ideas—educated choice, quality of living, protecting one's own health, and gaining skills to do so. The interesting thing is that all of these, as I indicated, are real grass roots movements. They have grown up independent of, and frequently in spite of, the medical establishment, the governmental establishment, and the educational establishment. I think it can even be suggested that the recent wave of towering rhetoric on the subject of health promotion, which we have all enjoyed so much, represents an attempt to some extent (at least on the part of those establishments) to catch up with where the people already are. We in health education have been the beneficiaries to a limited extent in terms of resources—to a considerable extent in terms of approval of these changes—and we are also the intermediaries, of course, in carrying out much of this change.

At the Federal level, the resurgence of interest in health education has brought several new agencies and programs into being in the last several years. Our Bureau of Health Education, recently reorganized as part of a new Center for Health Promotion and Education, was the first and was established on a shoestring in 1974. The string has held the shoe on the foot all this time. It was established at CDC in Atlanta over the howls of protest of a good many people. Because CDC was becoming a prevention arm primarily of the Public Health Service, because health education was viewed as an important instrument for reducing risk and therefore causing prevention to happen, and because CDC had long-established relationships with the States and communities, we were established at CDC rather than at some other agency. All these factors have come together in this grant program; I think establishing the Bureau at CDC has proved a most fortuitous choice.

Two years after the Bureau was formed, Public Law 94-317 gave official Congressional sanction to our new interest in our long-neglected field. Among other things this law led to the establishment of the Office of Health Information and Health Promotion at the stratospheric levels of the Office of the Assistant Secretary. So now where there had been none, there were two separate but complementary programs in the Federal health enterprise. This office, OHIP, at the policy-making level was to provide a leadership and coordinating role for a number of governmental and nongovernmental agencies that were engaged, at least part of the time, in health education. The Bureau at an operating program level was gradually able to build the staff and resources to begin to stimulate program development in health education and promotion in the States, in the communities, and in the private sector.

We have had our good years and our bad years, but through it all I don't think either of those two agencies has lost sight of our common mission and complementary functions. The situation was one which to some skeptics appeared to be made to order for battles over turfdom. I've rarely, if ever in my 30 years in the Federal Government, seen a stronger mutual commitment to collaboration over the years. That's quite a little success story that I am personally very proud of.

As a consequence of all this, some exciting things have been happening and are still happening, in part at least, through these Federal initiatives. Better school health education curricula are being developed, tested, evaluated, and

disseminated around the country. Patient education has become an accepted and a growing part of inpatient and outpatient care. There are new and promising health education methodologies, such as health risk appraisal. There are many other models that are being developed and evaluated. Business and industry are increasingly expressing real interest in the work place as a focus for health education, and some businesses are beginning to demonstrate this.

Most recently over the past 2½ years, the State health agencies have been encouraged to initiate or build on existing programs through the health education-risk reduction grants, which incidently were also authorized by Public Law 94-317. In fiscal year 1979, a very modest $3½ million—modest when you spread it across 54 States and territories—became available to us at CDC to start what we wanted to do from the beginning, as I indicated. That was to build or rebuild the capabilities of the State health departments to act as stimuli, as catalysts, and as coordinators of effective local health education programs. When the program started, health education had virtually disappeared as an identifiable or an active program in many of the 50 States. In some there was still a nucleus around which to build, and in others it had to start almost from scratch. But in that first year, with those relatively few bucks of seed money and a small staff of circuit riders to provide some technical assistance, the seeds really began to grow. Some bright new people were hired, and that was very important. One of the things I like most about this audience is the fact that there are many new faces and many young people in the group.

That first year some long-existing plans and resources at the community level were dusted off and polished, other great new general intervention projects were funded, and, not surprisingly, a few of the States continued to flounder around and sort of look for the stadium after the game. But, by the time the FY 1980 budget was ready to be issued, instead of 10 or 12 State programs in health education around the country, there were around 40 States with promising programs underway, and several others just about ready to take off. So we planned and obtained funding for a good sensible increase up to about the $6 million level, to continue the program for the second year. Then a funny thing happened. A rather obscure section of an omnibus health services amendment for 1978 authorized $10 million to support local projects to deter children and adolescents from smoking and using alcohol. To the surprise of a lot of people, including me I might add, the full $10 million was appropriated. So here was a new grant program looking for a home. It was originally lodged in the Office on Smoking and Health (OSH), which had been created by Mr. Califano, again at the upper echelons of the Department.

OSH convened a group to explore where the program could most effectively be administered, and administered in a hurry because we had to get those grants out very fast. Incidentally, two representatives of the Office of Smoking and Health with whom we have worked very closely over the years are here for this meeting, John Bagrowsky and Bill Lynn. If you don't know them, I hope you will get acquainted during these sessions. Anyway, OSH called together five agencies that might logically have been a home for this grant program: our Bureau, the Office on Smoking and Health itself, the Institute of Alcohol Abuse and Alcoholism, and the then Office of Education. Instead of engaging in a five-way tug of war, which would have been predictable, it was agreed, in a really remarkable display of interagency cooperation, that our fledgling health education-risk reduction grants were the best available vehicle. Frankly, we were a little intimidated, here was a $10 million tail to wag our $3½ million dog. The time was very short, and some of us felt a little bit lofty at having this very categorical program tacked on to what had earnestly started out as a comprehensive program of health education. However, there was the money, and it seemed to us that it was "better to have loved and lost than never to have loved at all." So we went to work.

We asked you 50 State people and a lot of your friends and constituents in other agencies to beat the bushes for projects, and boy, what a crop we harvested. Six hundred and one, count them, 601 grant applications were forwarded to us by the State agencies to meet our deadline. I don't know if you can envision 601 grant program applications; each application was very thick, each a fairly formidable package, especially when we had requested several copies.

We then put together some excellent review panels representing 10 different parts of the Public Health Service. This in itself was no small achievement. Those review people worked literally night and day to review those applications, scoring them on a scale of 0-200. They read applications at night and discussed them during 1 full week of working meetings; at the end of that effort they scored applications and arranged them from high to low, and we funded them from the top

scores down as far as the money went. This is why you're here and a lot of people aren't. From the 601 applications, we were able to fund 165; so we may have 165 friends and 436 enemies, but we had to live with that. We did have enough money for 135 smoking and alcohol projects and about 30 very good general interventions. About half the smoking and alcohol projects were school based and about half community based, which we had been hoping for. About one-third of them, which was better than we had hoped for, were entirely or predominantly addressed to minority groups. The projects were as diverse in proposed methods as they were in sponsorship.

All but about five of those initial projects were strong enough to merit continuation funding for the second year. These funds just got out—the funds that were awarded in August 1981. Meanwhile, the State programs in that second year were looking even better, and we awarded all 54 participating States and territories 1981 fiscal funds, which you know carry projects through most of fiscal year 1982. Hence, our presence here, and that's the past and present of a little bit of how we got here, and bringing us to the here and now and the somewhat uncharted future.

As you know, of course, the Health Education-Risk Reduction Grant Program has been lumped into the Prevention and Preventive Health Services Block Grant for fiscal year 1982 and beyond. That means that when 1981 funding runs out (for you, September 1982), the competitive arena becomes the State level. Each State one way or another will decide henceforth how much of its preventive services money will go to health education and risk reduction. Some may decide to support it more liberally than it is being supported now; others may decide to throw it out all together, and my suspicion is that most of them will fall somewhere between. Our hope is that nearly all of our State programs will have sufficiently demonstrated their vitality and usefulness to merit continuation; that you will have generated some constituencies out there that can begin to help you apply heat in the right places; that you will begin to have enough results to satisfy resource allocators that you're worth it, and that you will indeed survive and prosper, even in times when competition for health resources is going to be tougher than at any time in recent memory. A not-so-hidden item on the agenda of this conference is helping to make this happen any way we can. And that's where those national concerns come in that I started with which apply not only to risk reduction grants but to all the other projects we have been doing—the school programs, the health risk appraisal, inpatient hospital programs, and so on.

The Federal initiative era for the time being is on the downswing, but if these initiatives that we are talking about really reflect the national concern, then somebody out there is going to pick them up and keep them rolling, and that's you. For our part, we plan to be alive in Atlanta and we are going to provide all the advice and help we can. We do not know for sure how much in the way of resources we will be able to preserve at the Center for Health Promotion and Education for health education purposes. But we continue to be assured that we will be able to retain a core of competence that will permit us to keep health education and risk reduction as going parts of our program. To the extent resources permit, we do hereby solemnly promise to do certain things. We are going to provide information to you when we can and assistance on transition from a categorical to a block grant era; we plan to continue to disseminate "Dear Colleague" letters and other useful information. We hope to be able to do a little bit of walking around the country to provide some advice and management assistance and strengthen some of your methodologies. Generally speaking, we are going into a technical assistance mode because we no longer have money to grant. The great faucet in the sky is now temporarily at least cut off from the water source. But we do think we can be helpful; we do hope you will continue to call on us.

We have at CHPE a staff of people working out of our field services component who will be working on the risk prevalence survey part of the program and some people in the central office who will be working on the health education program. We hope likewise that you will keep in touch with us. I have talked about from where we came and where we are. I haven't talked much about where we are going because we don't know, but I'm going to close by paraphrasing the American philosopher and opossum Pogo, who said, "We have met the future and it are you." Thank you very much.

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Building a Constituency

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When I became Commissioner of Health in Massachusetts about 6 years ago, health education was kind of the backwater in the department. We combined it with something called "community health services" into a more active division of preventive medicine. The first year we eked out a few dollars from block grant money and gave it through this division, in very small amounts, to a number of worthwhile health promotion projects throughout Massachusetts. When we asked our legislators for money the next year, the Chairman of the House Ways and Means Committee said, "Are you kidding? That's a silly way to spend your money; I don't believe that's what we should be spending public funds for." So we made a few phone calls to the many organizations that had each gotten a few thousand dollars, and we got our money from the State legislature within 24 hours without much of a fight.

At this point, within the Department of the Public Health in Massachusetts, because we had worked hard initially to form a constituency, there is a very visible preventive medicine division that has formed good ties with the community. In 1981 about $1,600,000 is coming into the department for these activities. The block grant, which contributes significantly to the total dollars available, is now administered by the head of that division of preventive medicine. There are currently programs in about 10 different preventive medicine/health promotion areas with evaluation attempts in nearly all of them. The point is that if we did not spend our money particularly well initially in terms of backing a few large, exceptional programs we were at least able to use the funds to create a strong constituency that made it possible to build stronger programs in a few years. Sheldon Barr, who is the head of preventive medicine in the Department of Public Health in Massachusetts, can answer your questions about what is going on there now and what have been the continuing efforts to maintain a constituency.

I think to build a constituency also requires visibility. In my experience health education people have been very self-effacing, and although it's nice to be modest, there is also a time not to be. If you have programs that you think warrant public attention, you should make sure they have visibility. The real battles for funds are often fought before the time when funding decisions are made. These battles are fought in newspapers and on television and in people's perceptions of what you are doing.

One of the problems we all have in risk reduction activities is that we don't have tried-and-true techniques. But we don't have to be bashful, I think, in admitting this. Clinical risk reduction activity has only recently been shown to be reproducibly effective. And for a number of areas—for example, the prevention of alcoholism or sustained weight loss—I'm not yet aware of good reproducible community projects with clear, long-term beneficial results. In many areas, we don't yet have successful projects that have any outcomes whatsoever that you would want to get up in front of a group that was making funding decisions and talk about. So what you are doing, what we are all doing together, is a lot of formative evaluation. We are basically pioneers. We are trying to run credible programs and to tell people we know what we are doing, but at the same time we are trying to figure out what we are doing.

I think it is also important not to over-promise. We have many gaps in our knowledge. If anything can undermine our credibility, it is promising things that can't be fulfilled or making assertions that are not justifiable. We can make suggestions based on what is prudent, but, for example, I would be very uncomfortable telling people that if they reduced their cholesterol, they were going to reduce their risk of heart disease. I can tell them that is a prudent recommendation, based on

existing knowledge. But if they say, "Is there proof of that?" the answer, I think, is no. There is no obvious reduction of overall mortality in a couple of large studies that have been done here and in Europe. We can't say what is the exact mechanism by which exercise is going to help us reduce the risk of heart disease, in spite of good evidence that it will. If people say, "Do we really know how to measure stress?" I think it is very hard to answer yes. Reproducible ways of measuring it and measuring changes over time are extremely difficult. We also don't know, for example, how to maintain a consistently high level of participation in ongoing risk reduction programs. We know how to give a big bang and get things started, but not how to keep people interested over time. We don't know how, in a heterogeneous population, to get people of particularly high risk to attain a high rate of participation. We don't know how to get either young drivers or old drivers or any other kind of driver to wear seat belts. Therefore, we should not over-promise. We frequently cannot produce the level of evidence that we and others would like at this point.

Despite all these qualifiers, we can say that risk reduction works and that a lot of what makes it work is a combination of elements rather than a single program or a single effort. There was an interesting paper by Ken Warner[1] a few years back in the American Journal of Public Health, an analysis of smoking trends. He is positive that smoking would be 25%-30% higher in terms of consumption per capita had it not been for a number of activities, starting with the Surgeon General's Report of 1964, the radio and television ads about smoking in the 1960's, and the antismoking ads of 1970 and related publicity in the press. Smoking has declined, but its decline is not primarily the result of organized risk reduction programs or of individuals deciding to stop smoking because they heard it was bad. It is the result of many actions—a combined diffusion, if you will, through opinion leaders, communications, and organized programs. We can say that it is not one program that makes a difference, but that organized programs are part of what makes the difference.

Cholesterol levels have declined, and people are more conscious about their weight. These, I think, speak to the fact that risk reduction is working in the United States. One reason we need controls in our evaluations is because secular trends are changing rapidly. If risk reduction were not happening in the absence of a specific targeted program, we would not need controls because we could say any change that was noted was due to our program. The difficulty is in determining what is the relative contribution of the various efforts to the desirable changes we are experiencing.

In that regard, I bring up the growing problem of going up against certain economic interests, for example, the tobacco industry. The tobacco industry is starting to lash out and lash back, taking up the cause of smokers' rights. I saw an ad the other day that had an Indian smoking a peace pipe and saying nobody told him that he couldn't smoke if he wanted to. The ad was trying to show that it was American to smoke, and it violated your civil rights if somebody told you not to smoke. A big multimillion dollar campaign is now going on to encourage smokers not to be intimidated by the nonsmoking majority—assertiveness training for smokers! As people interested in risk reduction, we should be concerned not only about our individual programs but also about countering that kind of activity, which I think is extremely proficient and which is extremely well financed.

We need to be vocal wherever we see efforts to undermine good health promoting programs, whether it is in the area of smoking cessation, nutrition, family planning, etc. Unless we are willing to stand up against organized attacks on particular health program areas we are viewed as solely concerned about our own program. This is not in our long-term interests or consistent with our professional responsibility. It has been said many times that there are no gold stars for prevention, and that's true. We all work in an area where you cannot tell people that you stopped them from having a heart attack and expect them to embrace you. We are dealing with statistics and probabilities, not diagnoses. Nonetheless, we can use the fact that risk reduction works to find allies in a way that we have not done before. Several people at this conference have talked about the problem of getting teachers in schools interested and excited about health education. Many teachers view health education as a bother—something that has been mandated from above. Yet, you can talk to a teacher and say, for example, regarding smoking, "How many opportunities do you have as a teacher to add 7 good years to the life of each of your students? That's exactly what you can do by helping them not to start smoking because the average smoker lives 7 years less than the nonsmoker." If you can talk to teachers and convince them that they can, perhaps, be the single most important person in stopping Johnny from winding up as a drunk-driving fatality, then, I think, you can add some sense of worth to activities which sometimes are not viewed as deserving a high priority. You can increase the self-esteem of teachers and make them feel that their role is very important, as, in fact, it is.

In the future, evaluation will become even more important. People are going to start asking tough questions regarding these programs. They want to know, "What were the benefits, how can you show them, and how reproducible are they?" Part of the evaluation, and the part that I find is frequently missing even in careful evaluation design, is, what was the intervention? I can't tell you the number of papers that I review where the evaluation scheme is faultless and the analytical and the biostatistical techniques are great, but try to understand what exactly was done and you can't find it anywhere. My point is, please try to make sure you spell out the risk reduction activities. Is there a clear-cut curriculum? Are people delivering it the same way? Is there quality control built in?

In terms of future directions, I think public funding clearly is going to undergo greater scrutiny. What has happened to Federal funding, in terms of the faucet being turned off, is happening at the State, county, and other local levels as well. It seems to me that in the future the public is going to say the role of the public health department is to look to the poor, the people who can't afford these kinds of services on their own. The more one can make the argument that the program is going to have only good, clear effects on health and that it is going to save Medicaid, Medicare, and other public dollars as well, the better the chance for funding.

A second direction in the future is going to be consortia. I hope that the voluntary organizations are going to be able to work cooperatively with health agencies because neither really can exist alone.

There are two areas that are still likely to enjoy continued support (and again, I'm making a broad generalization that may not apply to your area). One is for programs for kids. There is a feeling that there is a public responsibility as well as a private responsibility for children, so I think the more the programs in the community are oriented toward children and can be shown to be effective, the better the chance of funding. The other is for programs perceived as public health problems. For example, the issue of fetal alcohol syndrome is perceived as a public health problem and the issue of rape is perceived as a public health problem, so I think they both will be funded. However, your programs are going to have to compete effectively in terms of quality and cost-effectiveness with the private providers who are out there. These are the hospitals, consultants, universities, and industries that have developed model programs that they themselves are selling. It's going to be a very tough competitive market, an even more competitive market than the one for risk reduction grants.

Now a few comments regarding wellness as a concept to be identified with your program. At our UCLA Center for Health Enhancement, we certainly use the term *wellness*, but we use it sparingly. In many cases, wellness has a bad image, and I say that just from a political viewpont. From what I observe, people are more attracted to the terms *health promotion*, *health enhancement*, and *disease prevention* than they are to *wellness*. So I think in your communities you might assess the reaction to the concept of wellness. I think you have a better chance of selling health improvement or risk reduction programs than wellness programs.

In most places where we are competing for public monies, the issue of personal exemplars is relevant. We must present an image that we, at least, do most of these things ourselves that we support. I don't mean I think everybody ought to be jogging 60 miles a week or that everybody ought to become a vegetarian or that nobody should consider moderate drinking. I'm not talking about that. But it is very difficult for someone who is 50 pounds overweight, who is a smoker, or who gets into a car and doesn't put on a seat belt—the simple obvious things we talk about in risk reduction/health improvement—to deliver our message. I'm not trying to blame people who can't change these habits, but it does reinforce our need to help our colleagues who have problems in these areas.

Finally, the issue of recidivism is one we have to address on a continuing basis. In smoking literature, everybody proclaims an 80%-90%-100% cure rate. Well, that 's great, but 6 to 12 months later, the average is 20%-25%. If you look at some of the articles on it, when people get 50% abstinence at 6 months, as we recently reported and a few others have also reported, everybody thinks that's very good. But it's still not very good; it's just a little better. With obesity, until Steward's paper in late 1960,[2] there was no demonstration of sustained weight loss, and still the number of demonstrations is very small. Exercise, spas, and health clubs would go broke if everybody that signed up to exercise actually did it; they rely on the fact that 90% won't. They are relying on recidivism. Of course, their pricing structure might change if they had people

actually exercising. Recidivism in all our risk reduction programs is a great problem. I hope evaluation in your program always addresses that issue carefully.

Let me talk for just a few minutes, in conclusion, about the center at UCLA. UCLA was one of the first universities to decide that there was a great enterprise within the university devoted to illness care, i.e., devoted to reduce the burden of disease after people have already had disease. But the feeling grew that there was also a need to focus on health and how we can prevent disease and promote health. From those very simple thoughts, a Center for Health Education and Research developed. Education and research were hard to sell. And it took some people in the community who were willing to put up a lot of dollars to help get this concept started, but not *all* the dollars it takes to get it started. So what has been developed is a multidimensional center, not part of the medical school or the school of public health, but part of UCLA. It has an advisory group including the dean of the medical school, the dean of the school of public health, the dean of the nursing school, and the chairman of the department of medicine. It has a staff of about 50 people now, about 25 to 30 health professionals of one type or another and about 20 support staff.

Its mission is very simple: to prevent disease and to improve health. Its activities fall into three basic areas. One is the clinical area, the program that was first started and the one that some people associate most with the Center. We have a residential program where people come and live for 24 days at UCLA, trying to make significant changes in their health habits. We include a 5-year followup, but the actual intervention, the most intense intervention, is the 24 days. We get people with hypertension, many people with cardiovascular disease, and a few I would like to see there more, the people who have a number of risk indicators—obesity, smoking, lack of exercise, or stress—people who are at high risk. But usually they don't come into a program until they have developed a heart attack or some other serious problem.

We have a very intense behavior modification program. We also have good medical care and rehabilitation. We have, in addition to the types of professionals you would expect, psychologists, nutritionists, and exercise physiologists. We have people who are expert in behavior change and physicians and nurses who are patient educators and health educators all working cooperatively. Trying to keep that coordination is very difficult. It is also very difficult because we don't have good reimbursement, and it costs $5,000 for 24 days of this live-in program. This is not expensive, however, compared with by-pass surgery or a comparable 24 days in the hospital, which at UCLA would cost you about $15,000-$20,000. Nonetheless, it is expensive because it is an out-of-pocket expense. We've had, I'm happy to say, a contract with Medi-Cal in California to put a limited number of Medi-Cal recipients through the program. So it's not simply a program only for people who can afford it. We've also given away over a quarter of a million dollars in scholarships. That's something that almost made us go broke. We run our own food service, and we have, I think, a fairly reasonable, sensible nutritional program of reduced salt, reduced fat, reduced saturated fat, high complex carbohydrates, and high fiber—the regimen you would expect.

We are also developing an ambulatory program that is a weekend-type program or evening program for the person who is working. This is going to be operational in a couple of months. We are going to give people a couple of days' orientation and then have them sign up for various action programs, like weight reduction or smoking cessation. But we want all to have an opportunity to do the program over a period of a year or a couple of years, not simply for a week and then forget it, because the recidivism is the biggest problem.

We have other spheres of activities that we want to expand. First, we have a cardiac rehabilitation program, which is part of the Center, where we are taking people after myocardial infarction or also after by-pass surgery. It's not just an exercise program like most other rehabilitation programs. It has a nutritional component, a stress component, a smoking cessation part, and weight reduction. So we are taking what we have learned and trying to put it into a less expensive environment. Another area is children. I'm a professor of pediatrics at UCLA, and I am very interested in children. One project we have now is the risk reduction-smoking and alcoholism prevention project. We have developed a curriculum to prevent alcoholism and smoking, and it is being used with seventh graders. We are testing it in four school systems in a randomized, controlled manner, over several years. We have also done some consultation with a "Know Your Body Program."

We are very active at the worksite. We have two multicomponent risk assessment and risk reduction programs at companies in the Los Angeles area. One is at the Mattel Corporation. We are, of course, doing a careful evaluation of it, and it's hard. People here that work on worksite projects know all the problems that never get written about in trying to do things in that environment. We have a second program just starting now, at TOSCO, which is an oil company, also in Los Angeles. We have provided consultation to many other companies both locally and nationally to set up effective programs, to do good planning, and to evaluate the impact of these programs.

From an educational point of view, we have students in nutrition and administration at the Center from the School of Public Health. We have students from behavioral sciences and health education and ones interested in epidemiology and biostatistics. We have had psychology students, nursing students, nurse practitioners, and residents and fellows from the division of cardiology and from family practice at various medical schools. We have tried to put all these things together to provide professional ongoing education to physicians and nurses, health educators, and other groups about what we are doing.

I'm sure we are only doing probably about a hundredth of what we should, and I'm sure we aren't doing it as well as we could because we are all in the process of learning. But it is at least one model. Perhaps, in your area there are educational institutions that you could use. In many cases there can be a mutual benefit from some of the community programs by working with universities. Universities need access to populations. Most schools of public health or medical schools don't have population-based programs. On the other hand, you may need some help and some clinical advice in some cases, especially in the area of evaluation.

Let me close by saying that it's very exciting for me to have seen this assemblage come together. I really think there is not enough credit given to the Centers for Disease Control and to Hod Ogden's leadership. It is difficult to administer a program in these times, and the fact that this meeting was able to happen at all is a testimony to him, his staff, and to all of you. Thank you.

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II. RISK REDUCTION

The Leading Causes of Death and Risk Reduction

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As has been pointed out, there are only a few physicians in the audience of this particular meeting, and I am the only physician on the panel. I want to discuss the leading causes of death and risk reduction from my point of view as a physician in the private practice of cardiology.

First, I know that people can change their risks. I have seen highly motivated people make enormous positive differences in their disease states. For example, I have one patient who is 37 years old; after I had put him on an exercise and dietary program, he reduced his cholesterol level from 340 to 170 and his triglycerides from 500 to 160. When he, like any other motivated person, was really ready to make the effort, he could affect his health. Therefore, we cannot deny that we as individuals have a big responsibility for our own health. But, although we can produce dramatic changes, it is difficult to keep us motivated.

Cardiovascular disease is a problem we can change, yet 54% of the American population (1977 data) will die of heart disease. Most of these deaths will be from heart attack, i.e., myocardial infarction. Additionally, 17% of the population will die from cancer and 6% from accidents, leaving 23% to die from all other causes. With over 50% of the population involved, cardiovascular disease is the biggest health problem facing Americans today. Other sad facts related to this are that coronaries (heart attacks) have increased by 500% in the last 50 years and that 10% of American males at age 45 years will not make it to age 55 because of a coronary. It is a tragedy today that cardiovascular disease kills people, men particularly, when they are at their most creative and productive ages. About one-half of all cardiovascular attacks occur outside a hospital, and for about 25%, the first sign of coronary artery disease is a quick heart attack and death. The fat deposits—the fatty plaque that builds in the arteries—build up over time on the arterial wall, eventually occlude, closing different vessels around the heart, precipitating a heart attack, stroke, or other cardiovascular event. Yet this and the other leading causes of death for men today ages 35-54 are preventable.

For mortality among men, heart attacks rank first, lung cancer second, automobile accidents third, cirrhosis of the liver fourth, and strokes (related to high blood pressure) fifth, as leading causes of death. Ken Cooper, in his book Aerobics, talks about these as self-induced diseases.[1] If you look at them, they are. We can prevent these self-induced diseases by 1) not developing arteriosclerosis (i.e., lowering cholesterol, to avoid developing arterial plaque), 2) not smoking, 3) reducing alcohol consumption, and 4) not drinking and driving. The ranking causes of death among women are almost like those among men, except that breast cancer ranks first among women. Lung cancer has moved from number eight to number two as a cause of death for women. So the cigarette ads are not kidding when they say, "You've come a long way, baby." Yes, from number eight to number two.

There are known risk factors for all leading causes of death. Three major risk factors are cigarette smoking, high blood pressure, and high cholesterol levels. There are others including physical inactivity, stress, excess weight, high triglycerides, and diabetes. Although we cannot change our age and we cannot change our family history or background, we can work on our risk factors.

In the absence of 3 major risk factors, coronary events occur at the rate of 22 per 1,000 population; with 1 factor present, at the rate of 55 per 1,000, with 2 present, at the rate of 100 per 1,000; and with all 3, at the rate of 185 per 1,000. When one looks at cholesterol levels in the general patient population, 20% of patients who have cholesterol levels of 203 or less will have coronary artery disease; 40% of patients with cholesterol levels between 203 and 230 will; 60% of patients with levels between 231 and 260 will; and 80% of patients with cholesterol levels over 260 will.

One of our problems is the concept of a normal range of cholesterol. Norms are ordinarily based on measures of population. We tend to be an inactive population, however; thus, our average level of cholesterol is probably higher than it would be if we were a population that exercised regularly. Therefore, we should think of optimum levels of cholesterol rather than our current norm.

Although high blood pressure is controllable, in 1962, 44% of the population with high blood pressure were unaware that they had it, and only 16% of those who were aware of their disease were under adequate treatment. This continued through 1971, until the National Institutes of Health, seeing these data, pushed hard, through the National High Blood Pressure Education Project, to identify hypertension and to see that these persons sought adequate care. In just 3 years, through this national effort, the percentage under adequate treatment rose to 29%. These are major changes, yet it is terrible that less than 30% of patients with hypertension in 1974 were under adequate treatment. I think this is a deplorable statistic.

But to change these statistics, we must reach people before they have had a heart attack. Through health promotion and education, we can make a major impact, to help people understand and know their risk factors.

Coronary disease does wake people up; the coronary patient is ready to accept a personal responsibility to help. The physician says, "This is what *you* must do. I cannot do this for you. The prescription is not drugs, but effort—yes, effort—diet, exercise, and change in attitudes."

In our program, we get a history of physical activity and do an examination. All cardiac rehabilitation patients undergo treadmill stress testing, but persons either for health promotion alone or because they have high risks should also do a treadmill stress test. Then, we tell them to exercise four times a week for 30 minutes at a minimum (a 5-minute warmup and 20 to 30 minutes of sustained activity.)

Ralph Paffenbarger, one of the best cardiovascular disease epidemiologists, has identified a dose-response relationship between exercise and protection from either having a fatal heart attack or a less severe heart attack.[2,3] Vigorous exercise provided the most protection.

Now just a few words about how cholesterol is transported. As you know, cholesterol is carried by a lipoprotein. There is a high-density lipoprotein (HDL) and a low-density lipoprotein. We have learned that a high HDL level is a protective factor against heart disease, and this finding has tremendous implication for the prevention of coronary heart disease.

Five known ways to raise the HDL levels are exercising, stopping smoking, losing weight, a low-fat diet, and a small amount of alcohol intake each day.

Coronary artery disease regression is also possible. A recent study documented this process in monkeys (through diet changes)[4] and in a study of one patient (through exercise).[5] We know that we can reduce heart disease. Heart disease in 1982 is our fault, it is not God's or Nature's way.

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Health Promotion and Prevention Activities

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Why should community health centers or anybody care about disease prevention and health promotion programs? Why should 30% of each Region's allocation be used to support the abstract notion that a system centered approach to health care services will, in fact, improve individual and community health? Aren't the wellness people a little eccentric, you know, the health nuts, the kooks, and fadists? Aren't you already stretched to the limit of your imagination to provide basic patient services that you know how to provide without having new demands placed upon you? What evidence is there that people can or will change their behavior to reduce risks to health?

Providing answers to these questions based on experience with a community based health education center is my task for this morning. Your task is to think critically about how what I am saying applies to your own situation. Why should we care about prevention and promotion? There are several good reasons. Disease prevention and health promotion work; they save lives; prolong productive years; improve the quality of life; and use limited health dollars more equitably.

Based on what has been learned about prevention in recent years, the following can be expected about major killers in the United States:

- Degenerative diseases (such as heart disease, cancer, and stroke) cause 75% of all the deaths in this country. Many of these deaths could be prevented.
- Accidents are the most frequent cause of death among persons between the ages of 1 and 40 years. Most accidents can be prevented.
- Environmental hazards contribute to many of our serious health problems. Many environmental hazards can be controlled.
- Unhealthy habits (e.g., smoking, overeating) play a role in the development of chronic disease among middle-age Americans. Habits can be changed.

Why the current interest in health promotion and disease prevention? Sometime in the last decade people started to become aware that what we did to and for ourselves was more important to our health than what was done to us. Some authors have cited disillusionment with curative medicine as a major reason; others emphasize the high cost of doing more and more to achieve fewer and fewer benefits.

My own interest grew out of a community study that took place in Pittsburgh early in the 1970's. As a health planner, I had the job of staffing a citizen's task force looking for gaps in health services. What did we find? We found that services were actually available. There was a free clinic for youth; there were neighborhood networks of community health centers (some represented right in this room); HMO's were developing; hospitals were changing services for medically underserved; and hospices and other long-term care facilities were growing. What was missing was a mechanism for getting information about the services to the people who needed them and a structure for empowering people to make decisions on behalf of their own health.

The Health Education Center in Pittsburgh was organized to respond to this need. At the same time that our local community was organizing the Center, a Bureau of Health Education was established at the Centers for Disease Control in Atlanta, and shortly thereafter, a National Center for Health Education was started in the private sector. National legislation was passed authorizing the Office of Health Information and Health Promotion in the Secretary of Health's Office,

and *Healthy People, A Report of the Surgeon General* calling for a national commitment to efforts designed to prevent disease and to promote health was published. In the late 1970's for the first time, our country had national prevention goals and guidelines for reaching these goals. Prevention and promotion programs carried out in your communities will assure our reaching these goals by 1990.

The allocation of funds for your programs requires carrying out these activities in cooperation with others. The Pittsburgh Center uses a community based or systems centered approach for all of its activities. Representatives from seven community groups work together to achieve goals related to reducing risks in six areas: smoking, nutrition, accidents, stress, exercise, and alcohol and drugs.

What about the notion that the health promotion people are a fringe group, health nuts, fitness freaks? Yes, there are some self-appointed experts, eccentrics, and fadists offering alternative therapies without scientific justification. There are, however, ways to avoid being entrapped by these without ignoring the real contribution that planned and measurable health promotion and education programs make.

First of all, it is important to understand what health education and promotion is and is not. At the HEC, we use the words interchangeably and say that educational programs that promote health are any combination of learning opportunities designed to make it easy for individuals, groups, or communities to voluntarily behave in healthy ways.

There are many other definitions—some more formal, some less formal than this one, but in all:

- the operative word is *behavior*,
- the defining characteristic is *voluntary*, and
- the key to success is a *combination* of learning experiences.

The activities we call health promotion/education can take place in schools, homes, and communities, medical care settings, and worksites. The personal behaviors most likely to promote health relate to: smoking, eating, stress management, drinking, exercise, safety, drug use. A body of scientific literature, a group of professionals, and a growing public awareness that medical technology has its limitations and that maintaining health is easier than recovering health have put health education in the forefront of what is being called the "wellness revolution."

Health education and promotion contribute to well-being by continuously facilitating and reinforcing behavior change.

What Health Promotion/Education Is Not

Health education and promotion are not just public relations, marketing, or communications programs. Although all these are related and social marketing comes closest to health promotion, any health promotion program worthy of note will have a mix of strategies and will base expected outcomes on socially responsible goals.

Example 1: *Blood pressure screening.* How was this done? Did the nurse talk to the patient about the nature of hypertension? Were pamphlets distributed that could be understood by clients? Were persons with elevated blood pressure rescreened? Did someone assess their diet? Is the salt content indicated for foods distributed from the health center's vending machines? Are patients with elevated blood pressure rescreened regularly? If the person with high blood pressure is a smoker, are choices for smoking cessation programs offered for his or her use? Are there exercise resources for the hypertensive person who wants an exercise program? If the blood pressure screening was part of a total program that provided information, counseling, and support services and that had preplanned followup activities designed with the population in mind, this was a health education/promotion program. If these things did not happen, this was a screening program only and not likely to promote health.

Example 2: *Physical fitness program.* Are there professionals available to prescribe the correct acceleration of exercise? Are the participant's exercise preferences taken into account? Are nutritional habits assessed and changes, if necessary, recommended? Are materials about exercise distributed that take into account the participant's age, ability to read, and physical limitations? Are the grounds and the building conducive to walking or taking the stairs rather than the elevator? If so, this is a health education/promotion program.

If only the exercise equipment is made available with little or no supervision, then this is not a health education program. Sporadic exercising may make the person feel momentarily terrific, but it will not be enhancing his health.

Example 3: *Health risk appraisal.* How was the health risk appraisal administered? If self-scored, is an explanation provided? If computer scored, is someone available to help interpret the results? If risks are identified, are classes or other services available to help reduce risks? Are the data on which the health risks are estimated adjusted for the population using the appraisal? If a printed appraisal form and a computerized analysis are all that are provided, this is not a health education program. Contrary to some claims, there is no known health risk appraisal that will increase productivity, lower health care costs, and decrease morbidity and mortality.

The conclusion is that there are many activities and programs which could enhance health, create awareness, and prevent disease and disability. However, only when they involve more than one contact with people, where the person is allowed to decide for himself/herself what to do, and where the emphasis is on not only identifying problems, but also having services and resources available so people can do something about their problem, can you confidently call it health promotion/education. Only then can you expect behavior to change.

What evidence is there that people can or will change their behavior? The incidence of coronary heart disease has decreased 25% in the last decade. A recent conference called by the National Heart, Lung, and Blood Institute to examine the reasons for this decline concluded that alteration in health habits—especially smoking but probably also nutrition and early detection of hypertension—followed by better and more sustained treatment were in large part responsible for the decline.

Recent figures from the Alcohol, Drug, and Mental Health Administration show that adolescents' use of marijuana has shown a significant decline in the last few years. This decline is credited to young people's growing awareness that pot is not cool.

The number of people who have stopped smoking have made it actuarially sound for insurance companies to offer reduced rates for nonsmokers.

When planned programs respect individuals' rights and are not aimed at blaming the victim, behavior change does occur.

The "Health Promotion Assessment Guide" published by the Bureau of Community Health Services in January 1981 is still an excellent and pertinent document for use in your program. It offers practical advice on what to look for in preventive screening, health protection services, and health promotion.

It is not just morally and socially responsible to have health promotion and prevention programs in your organizations, it makes good economic sense. Business and industry are increasingly concerned about the costs of health care. The front page of the *Wall Street Journal* last month had an article saying that even with the economic crunch businesses with fitness programs were *not* cutting them out.

Where do you start? Start with your own environment and your own staff. Carry out health risk assessment in your own organization. Are there options for people who want a smoke free environment? Are vending machines with cigarettes and snacks still around? Is there an exercise program accessible to your employees? Can your staff serve as models of healthy behavior?

Once it works for your staff you can transport it to others. It's not easy, it's not cheap, but it can be done. Who better to do it than community health centers, like mine, like yours.

The Institute of Medicine sponsored a high level think tank type conference on community oriented primary care earlier this year. They lamented the fact that primary care had not caught on in this country, that centers like yours were still on the periphery of medical care, that medical schools were not interested in it, and that physicians were not trained for it. The analogy was made that tertiary care practitioners were like the astronauts, getting all the attention, the exquisite technology, the goodies, and—that primary care practitioners were like the bus drivers. Well, not too many of us are flying to the moon, but plenty of us need buses to get us where we want to be. Let's make sure the bus is equipped to do the job. The Health Education Center of Pittsburgh will be proud to work with other community resources like yours . . . help people Enjoy Life. . . Stay Healthy!

Health Education-Risk Reduction in the Business/Worksite Arena

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What I bring to you is a new message about the nature of risk reduction as a health education goal. Having been in the public sector and now having moved into the private sector as a consultant, I'm here to give you some suggestions on how your work relates to the employee world and can be transferred to that world.

Let me read the following example:

> You work in a factory, your day begins at 7:30 a.m., you arrive on time, cheerfully greet your fellow workers. At the sound of the small whistle you are at your place and begin a 20-minute session of stretching and limbering exercises; at 8:00 you head for the assembly line fresh, invigorated, and alert. At mid-morning you take a short break, then join the quality circle and talk about lines productivity, possible improvement, about any potential new policy forthcoming from management, and then back to work. At noon you eat a moderate lunch, very nutritious, then you head out to the athletic area for a quick game of tennis, volley ball, or soft ball. After a 9-minute break, you return to the line.

Sound like another world? It is simply a picture of everyday work life in Japan. It's no coincidence that productivity in Japan is increasing at 10% a year, while productivity in the United States has been declining. The enlightenment of Japanese business management with respect to the health of employees may well have significant implications for workers in this country.

The Japanese experience appeals to our comradery as health educators. As a trained health educator, I know that we are visionaries, especially in the area of risk reduction. We are literally working on the cutting edge of health care, with a formidable path before us to influence and reduce the percentage and the incidence of preventable disease in this country.

But let's step back a minute for a larger perspective. One hundred fifty years from now, not one of us in this room will be alive on this planet. We'll all be gone, and a whole new generation will be sitting in rooms like these listening to conference presentations. What kind of legacy will be waiting for them? Will they feel victimized by society and approach their health solely by receiving medical attention from their druggist, doctor, or medicine cabinet? Will television continue to state, "If you have a headache, take an aspirin; if you have a stomachache, take Di-gel."* Or, are we going to leave this planet for the next generation with a sense of feeling good about personal health, and a clear sense of self-esteem?

As a past staff member of the HSA here in Orange County, I have had an opportunity to influence the future, being responsible for developing a 5-year health promotion plan for the county. The document received national attention. And, as a result, I traveled with Hod Ogden and others around the country, bringing the message of health promotion to people across the country. My important message, from that cross-country experience and from my current consultant experience, is that with a good program, and good ideas, in a local- or State-level risk reduction program, it is possible to transfer your skills into the private/corporate sector.

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*Trade name is used for identification only; its inclusion does not constitute endorsement by the U.S. Department of Health and Human Services or any of its agencies.

In the face of both State and Federal cutbacks, we must look beyond our present situations as professional health educators to influence others' health status. Four years ago, I remember a meeting, in my hometown, Laguna Beach, at which I was listening to a woman from the California Arts Council talk to the local Arts Commission. She said to them:

> You know, you are looking for public grants to continue meeting the needs of people in an aesthetic sense. These funds are shrinking. Instead, go into the corporate world and encourage them in their social responsibility to assist with some of your financial needs.

This is the same situation we currently face in health education. There is a lot of talk about developing employee health programs in the corporate world. But it is not an "easy nut to crack." First we must ask ourselves, "Why is the corporation a suitable location?" I have uncovered statistics reporting that General Motors last year paid more money to Blue Cross than to U.S. Steel. Moreover, almost 10% of the operating budgets of most corporations goes toward sick care. In 1978, the National Chamber of Commerce created a document about how business can promote good health for the employee and their families. This report lists the benefits business would realize if employees were healthier, including reduced insurance premiums, reduced absenteeism, greater productivity, and less labor turnover. Each year businesses lose an estimated 52 million workdays to heart disease; a billion dollars lost productivity to common backache; and the list goes on. In the final analysis, through promoting health actions, businesses will be helping to improve the well-being of employees, their families, and society as a whole.

Why would we choose to work in the corporate arena? One way we really can reach the greatest number of adults in society today is through the corporate structure. Business is also the arena which maintains the greatest control over the livelihood of people. With decreasing available public monies we need to pursue other avenues, one of which is the corporate arena. Several good models of ongoing corporate programs serve as examples. We know about the Rolm Corporation, here in California, which has developed a comprehensive fitness center and employee health focus; the Sentry Insurance Company and Kimberly Clark in the Midwest also have recognized programs. These programs, however, reveal only the tip of the iceberg.

Attempts to develop programs at the worksite are much broader than those examples. However, numerous barriers are encountered as we try to enter the corporate arena. First, the institution's goals often don't seem to be consistent with the health of the employee. A second barrier is that businesses tend to feel health promotion programs may take valuable time away from employees' jobs. (Remember, the corporate bottom line is money.) Third, more information is needed to demonstrate to the business world that risk reduction is important. Facts about reduced absenteeism, increased productivity, and resulting profits need to be communicated so we can match health goals with corporate goals.

What are some strategies to enter into the corporate world? First, I would suggest that you begin to identify corporations in your own community that are already tied into health promotion. Worksites with existing facilities for their employees, such as swimming pools, jogging trails, and maybe tennis courts, should be included. Identify individuals at the top executive level who are already involved in health; perhaps they serve on some kind of health-related program at the HSA or local volunteer organization, such as the American Heart Association or the Cancer Society. Sometimes, it's possible to identify key executives who are considered to be "health nuts." Secondly, use perseverence. You don't reach into a corporation by saying, "We have a great program for you, and we know you are going to love it," and expect the officers of the corporation to respond positively. It more likely requires "pounding the turf," presenting your information, your package, and waiting for that 1% to 5% response from the hundreds of letters or proposals you sent out. The third strategy is to know your statistics about the corporate potential for programs. Be aware of how to meet their needs, not your needs as a health educator. They want to hear about how their corporation will be bettered or improved, more than about your impact or your intervention within their corporation. The fourth strategy is to sell health. Market your ideas in a slick, professional manner. That is the corporate game. We must market our ideas in ways that are responsive and sensitive to the way people in business think. Often the business world does not share our perspective.

Finally, we must remain role models. Jonathan Fielding said something similar this morning. I cannot begin to tell you how important it is that health educators be good role models for the rest of health education. Sometimes it's difficult

to be a professional health educator at the worksite and watch other health consultants who approach health promotion-risk reduction without exemplifying people who take care of themselves.

Lastly, I wanted to speak about strategies for developing successful risk reduction programs. Obtaining baseline information through some kind of evaluation or health hazard appraisal is essential. Baseline information will help ensure that the programs you develop are geared appropriately for target employees. Secondly, I would involve management in the plan. Conducting an introductory seminar or workshop for management can begin the consciousness-changing process since it must understand and be able to integrate the concept of good health. Once those in management feel that sense of positive addiction to their own health, it will become easier to sell and market your ideas in the larger corporate setting. The third strategy is be flexible to institutional goals as well as your goals. We health educators have a tendency to assume that people are empty vessels. They are not. Most people already know much about health and also have their own priorities. It behooves us to discover and initiate our programs from those health priorities. The fourth thing is to institute those programs that will earn the quickest results, cementing the corporation's trust in your programs and methods. In other words, while an evaluation procedure can identify smokers, many people with high blood pressure, and certainly enough people who can afford to lose weight and be on some kind of a physical fitness program, implementing a blood pressure control program first can more easily demonstrate to the constituency that health education works. And the fifth strategy is that we keep up with the best training and behavioral methods known today. So often we read about a successful health promotion program but we haven't a clue to understanding the intervention. Keep your skills current and maintain a good understanding of state of the art behavioral techniques. Earlier, a woman asked Lois Michaels about information transfer versus skill building. The answer is that information is important, but the true spirit of health education is the motivational process.

To summarize and conclude, we are not far away from developing more worksite health promotion programs. My message in leaving you today is that more businesses are becoming responsive to the needs of their employees' health as it relates to their own institutional goals. As health educators, we have a rare opportunity within the corporate setting to initiate steps toward that end.

III. RISK PREVALENCE

Setting A Baseline: National Assistance in Conducting Surveys

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In this program we are going to try to present a lot of information in a short time period. I will cover in some detail the approach to prevalence surveys that we have developed over the last year and a half and that have been implemented recently by the Georgia Health Education-Risk Reduction (HE-RR) Program. Dr. Marshall Kreuter, from the University of Utah, is going to talk about the State experience there, and we will have a presentation by four people who have been involved in gearing up their States' activities.

My presentation is entitled "Setting a Baseline." I will begin by describing some of the reasons we feel this is an essential activity. In the last year, several complementary events have helped to broaden the scope of public health by increasing attention to the risk of certain chronic diseases and to the leading causes of premature death and disability. One of these, "Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention," is familiar to most of you. It provides a rationale for shifting priorities to reflect today's leading causes of premature death and disability and their associated risk factors. A sequel, issued by the Public Health Service, is the "Promoting Health Preventing Diseases Objectives for the Nation," which described in specific, quantitative terms the national prevention targets toward which we should direct our public and private sector efforts in this decade.

A third, the "Model Standards for Community Preventive Health Services," provided measurable statements of prevention objectives, that were intended as a basis for State and local communities to negotiate agreement on quantified commitments on health status levels they wish to reach, as well as timetables to reach them. And finally, of course, the HE-RR Grant Program has provided 3 years of funding to official State health agencies so that they can begin to use the model standards and the message from "Healthy People" and the "1990 Objectives" to establish and organize health education risk-reduction programs at the State and local level.

I'm going to use those words—health, education, risk, and reduction—fairly frequently in the next days. The common theme that links these four is a pronounced emphasis on the *outcomes* of prevention programs—particularly on *measurable statements of those outcomes.* Baseline data are clearly necessary if these new directions are to be more than good intentions.

For 2 years, we have promoted a concept we have called "an organized approach to health education and risk reduction." Representatives from the Center for Health Promotion and Education (CHPE), at the Centers for Disease Control (CDC), have worked closely with States to help establish this approach. By the way, our representatives are known fondly, inhouse, as "circuit riders," and they pursue their job with all the missionary zeal of those pioneering preachers. Since I wrote this, I've pondered that image, and I still find it satisfying and fit. I really appreciate the enthusiasm of our program representatives in this area.

The development of this "organized approach" concept was based on the recognition of several programmatic necessities. First, within most communities, multiple organizations are using unknown amounts of resources to reduce certain risk factors, without the advantage of recognizing the combined results of their efforts and without the ability to compare

the effectiveness and efficiency of multiple community efforts with those occurring in other communities. Second, Federal funding of intervention activities would never have been sufficient by itself to achieve a dramatic impact on risk factors—for example, to meet the 1990 Objectives. The third point is that Federal funding for the demonstrations of effective health education methods in local communities will be of little significance unless the decisionmakers within these communities are sensitized to the needs of such methods and place priorities on maintaining effective methods. I must confess that these last two points are even more apt now than at the time CHPE first put forward the concept of the organized approach because very little Federal funding for demonstration activities can be anticipated until the economic climate improves.

The capabilities that characterize an organized approach are designed to meet the deficiencies to which I just referred. Most of you know these characteristics as well as I do, but I would like to review them very briefly. First is the capability to define specifically the extent of State and local risk factor problems—in other words, the prevalence of the risk factor. Another is the capability to establish, realistically, the specific measurable *objectives* and *priorities* for reducing risk factors. Also important is the capability to select appropriate methods and generate sufficient resources to meet these objectives. Finally, an organized approach demands the capability to evaluate periodically the status of risk factor problems and achievements so that objectives can be updated and resource sufficiently reviewed.

Baseline Data: The Keystone of an Organized Approach

Without proficiency in these areas, effective basic program management cannot occur. For example, without the capability to determine the prevalence of risk factors and to portray vividly what decisionmakers should be concerned about, the other three capabilities are not likely to be established. We see prevalence data, therefore, as an essential component of an organized approach; baseline data need to be established within the State and local communities and periodically reassessed. This is a keystone for the establishment of sound, ongoing programs.

At the outset, however, we found certain problems. First, only a few States currently have this capability. Second, existing data were found to have been of inconsistent quality, generally not comparable, and—fairly frequently—out of date. Third, the cost and effort necessary to determine the prevalence of risk factors were often described as excessively high. But, as you will see, this need not be so.

The usefulness of risk factor prevalence data can be demonstrated at the local, State, and Federal levels. In the local community, the collection, analysis, and discussion of the data are part of an educational process to sensitize the community to the prevalence and importance of these risk factors. The data can also be used by local organizations to stimulate and justify efforts to reduce risk, and they can be used to mobilize resources. Comparable data, when gathered periodically, permit community organizations to assess their individual achievements in light of the problems in the community. And I might add, States that adopt something like the Model Standards process have the opportunity, using the data base, to negotiate their realistic objectives. The Model Standards process is based on the notion that State-level people and local-level people can come to an agreement on what will be accomplished with agreed-upon resources. However, agreement on future achievement depends on knowing the current level—that is, knowing the baseline.

At the State level, we think that statewide data will provide program managers with an edge in relation to other health programs in competing for limited health dollars. Statewide data will provide the decisionmakers at the State-level organizations with the ability to establish their statewide objectives. Well-developed plans to achieve these goals will allow decisionmakers to facilitate the involvement of local chapters and agencies. Finally, comparable data from local communities can be used at the State level to identify communities in which special stimulation and assistance are needed to establish risk reduction efforts and, frankly, to identify also those communities that are detailing progress in reducing risk. And, as I said, the other side of the negotiation process, as envisioned in the Model Standards, is the State.

We have uses at the national level as well for these kinds of prevalence data. Data that are collected in a consistent and comparable manner can be aggregated to demonstrate differences in risk factor prevalence among States and local communities. Comparable data can also be aggregated to provide insight into items on population groups that might not reach

significance in individual States. Also, epidemiologic research can be greatly assisted by access to quality data--especially as time-trend data begin to accumulate.

Unless our data are periodically made visible at the national level, I'm afraid that the rather abstract nature of risk reduction will continue to be overshadowed by programs that are the perennial winners in health budget competition. Even within public health, such programs as immunization and maternal and child health often fare better than others, in my opinion, because of two things. One is that they can demonstrate hard data on the extent of their problem: immunization rates, measles case report rates, infant mortality rates. Second, such programs can show that these rates can be changed for the better.

There is no reason that risk reduction could not do some of the same kinds of things, and CHPE is therefore placing a great deal of emphasis in 1982 on risk factor surveillance activities. We think it is an important and valid role for our Center and one that is very similar to the role that CDC has played in traditional areas of public health responsibility, such as communicable disease. More recently, CDC has played the same role in other areas of public health--for example, prevalence of nutrition-related problems, and surveillance of abortions, sterilizations, and other reproduction-related problems. (These CDC responsibilities, by the way, are also lodged organizationally within CHPE.)

It is interesting to note that CDC established the world's first surveillance system--for polio--and that it did not occur until 1951. The second surveillance system did not come into being until several years later. Now, of course, CDC maintains surveillance in dozens of areas. We are really at the infancy of risk factor surveillance--we are, in 1982, probably close to the position public health was, with infectious diseases, in 1951.

I doubt that it will take us as long to obtain comparable data sets in this area because CHPE now has the experience of infectious disease surveillance--and, more recently, the transition to other noninfectious diseases--as a guide and resource. In other words, we will try to do the things that small organizations like CDC have to concentrate on: we will do a few key things and try to do them as well as possible.

In surveillance, we expect to be able to give you technical assistance in prevalence surveys. I will return to this in a moment.

We also expect to produce a national surveillance report as soon as possible, so you can see why I am emphasizing an approach that produces comparable data. Also, we will regularly be seeking your contributions to CDC's newsletter, the Morbidity and Mortality Weekly Report (MMWR). The Utah State Survey, which Dr. Kreuter will be discussing, was the inaugural report. We hope it will be the first of many such articles. To those of you who are perhaps not familiar with the MMWR, it is a vehicle that CDC has used very effectively to produce and quickly distribute information on important public health events that are occurring across the Nation. Originally, it was largely restricted to infectious disease articles. As CDC's mission has changed, so has the MMWR. Occupational health articles now appear and, recently, we have started to place risk reduction and health education material in it as well.

Obviously, surveys are not the sole element in the surveillance system, but these are going to receive the greatest emphasis in our technical assistance capabilities in the coming year.

We have pooled talents from several of our newly organized divisions to identify a practical method that States can use to determine the prevalence of risk factors. You will recall that we previously assembled a set of common data items--in effect, a survey instrument. Each specific risk factor data item corresponds to a key data item used in major national surveys and to the data sets that those national surveys produce.

The common data items were then used to prepare a telephone survey questionnaire. Our educational research team has worked very closely with the survey group to tighten up the wording of the questions. We reviewed random digit dialing methods and modified them to meet the needs of risk-factor prevalence surveys. Common data items were pretested and

modified. To pilot-test the random digit dialing process, a risk factor prevalence survey was recently completed in the State of Georgia.

To assist other States requesting this help, CHPE is putting together a technical assistance package. We hope to begin providing technical assistance directly to the States that request this assistance early in the next calendar year. The package will use a cooperative agreement signed last month with the Association of the Schools of Public Health. This agreement will provide additional consultation and guidance before and during the survey process. We will be discussing your interest in this kind of assistance at the round-table discussions on Friday.

In quick summary, I can assure you of several things. The survey provides a pretested questionnaire and a readily adaptable random digit dialing methodology to create a sample. We will provide intensive interviewer-training sessions; you will not have to have or to hire a trained survey team. Statistical and similar expertise will be available throughout the process. Within days, we will provide a baseline printout of selected items. Our assistance package then will help you to design an analysis plan to study, indepth, any areas of special interest in your State because, obviously, a standardized print-out of items is not the only analysis that you can or should do with the data. Later, our panel members are probably going to talk a bit about how they plan to use their data.

The agreement with the Schools of Public Health continues a three-way relationship that CDC's Director, Dr. William H. Foege, has been seeking to strengthen over the last couple of years. One of the three links is between CDC and the State, which is a traditionally strong CDC linkage. CDC's linkage with the Schools of Public Health has also been fairly strong, but it is an area in which we greatly need a strong working relationship. Finally, the link between the States and the schools is an area that, with a few exceptions, has not been particularly strong. Frankly, this linkage may find a more favorable environment in some States and in some schools than in others, but, obviously, we hope that strong, long-term relationships will evolve from this kind of package. Dr. Allan Steckler will refer to one such technical assistance arrangement that is already in place.

All of our program representatives will continue to work closely with you regarding an organized approach to health education. Regardless of their organizational assignment, all will be addressing that emphasis. Two of our people, Jack Jones and Gary Hogelin, will take the lead on risk factor surveillance; this responsibility has been assigned to our Field Services Branch, under Gordon Robbins. Liaison and technical assistance on educational methodologies and on the smoking and alcohol replication projects, for which additional money was provided this past year, will be provided within our health education group by John Korn, Dave Ramsey, and Fred Murphy. Both groups will be helping you further develop an organized approach to risk reduction.

The questionnaire has 33 items. It contains questions in smoking, hypertension, alcohol misuse, exercise, stress, nutrition, and—as an index of accidents—seat belt use. It takes about 7 minutes to administer. It contains all the appropriate instructions within it that the interviews need—appropriate introductions and call-back instructions; a table for selecting respondents to assure that the statistically appropriate person, other than the person who answered the phone, is actually picked in each household; and appropriate wording to smooth the transition between questions. There is a 60-card column for keypunching on which you get all the data. Your keypunchers will not require any instructions—the form is self-instructional.

Both the telephone numbers and the respondents are randomly selected. Telephone numbers are randomly generated, based on the primary sample units, which were randomly selected, screened, and identified as residential. The number of respondents, number of primary sampling units, and the cluster size are determined to meet survey confidence and precision levels (that we established in talking to you about what level of confidence you want in your data). The respondent is determined randomly when a household is reached, based on the number of adults in the household and the last digit in the telephone number.

Many people believe that surveys are costly and that it takes a lot of effort to carry them out. What are the resources that are required? For consultation with survey researchers and statisticians, we estimate that there is a 10-hour

commitment. We can provide that in our assistance package. The printing cost for the Georgia survey was $77. Telephone costs depend on what your rates are, how big the State is, how large a sample you want, and so on. Keypunching took 16 person-hours for the Georgia survey. You can get prefixes free. Presumably, you can also use office space without rent, for example, by using vacant offices on the weekend. There are marvelously inexpensive ways to get this survey done. The interviewers on the Georgia survey were paid about $2,500, total. The supervisor and editor were from the State staff. We provided—and will continue to provide—technical assistance for using the survey method and instrument. Admittedly, there are other costs. Obviously, your staff and your office space have costs associated with them, but they are fixed costs that you already have; it's just a matter of what your priorities are for allocating them.

Very quickly, let me show you the personnel used in the Georgia survey, by day. There were 11 interviewers on the first day, a Saturday. We learned from experience that the actual number of personnel needed was fewer than that; they were able to get many more interviews done at the beginning than we thought they would. On Saturday 247 interviews were completed, 111 more were done on Sunday. The rest was really just trying to reach people we did not reach on the weekend or who were difficult to reach. The completion rate was 84%, based on true contacts. If you base it on a more conservative denominator that includes all possible numbers, whether a contact was made or not, the completion rate was 74%.

Interviewer performance was monitored carefully, and interviewers were required to complete 45 interviews for payment. Two interviewers were finished before the third day was completed. Only 4 of the original 11 interviewers took 5 days to complete the required number. Approximately 187 interviewer-hours were required. Interviewers averaged 2.8 completed interviews per hour. Of the 150 respondents who initially refused interviews, only 77 totally refused after callbacks. Interestingly, two of our interviewers accounted for 37% of the refusals, so there is some variability in the interviewers. That is a problem we will work on.

Let me review some special problems. You have to have supervision. It is helpful if that is someone who has been through the process. You have to follow the interviewers' procedures very carefully. We found that statistical support was necessary from start to finish. We thought we had all the questions answered, but questions still came up. You need discretion regarding eliminating poor interviewers. You have to be careful about holidays intervening on your schedule. Our view—and I think this is the view of many people—is that you should not allow interviewers to do the interviews from home. The process has to be monitored; it has to be supervised. You have to train interviewers. This is better done by their practicing than by your lecturing.

In conclusion, I would stress to you that we consider the issue of prevalence data one of the critical ones in HE-RR programs. We in public health will never know where we are going or how far we have gotten unless we know where we started. I do not think we have a compelling case to make to the decisionmakers unless we come forward with rather specific data to define these important public health risks. We have got to be able to establish what is happening in our own community, to make that message clear to the public, and, obviously, to design good programs to address the most urgent of the problems. Prevalence surveys are an important first step.

In Search of a Baseline: Critical Issues in Developing a Risk Factor Prevalence Survey

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Introduction

Our task is to respond to the general question, What is the rationale (need and value) behind conducting State-level surveys to determine the prevalence of risk factors? We agree with the famous notion of Occam's razor: "It is vain to do with more that which can be done with less."[1] As a result, we were initially tempted to simply say, "It doesn't make good sense to shoot first and call whatever you hit your target."

That short sentence reflects a fundamental principle for program planning for public health education in Utah and does indeed express the basic motive behind the assessment of need in general. The answer to the question, "Why risk prevalence surveys?" appears to be self-evident and has been well established in the literature.[2,3] In the face of limited economic and staff resources and a public mentality that justifiably is calling for greater accountability from public service agencies, we cannot afford to be blunderbusses in our approach to health promotion and health education; we must have a baseline.

We have chosen to elaborate on a few selected issues we found to be critical in developing risk prevalence surveys; the issues are presented in two parts. The first pertains to the frequently overlooked action of purposefully promoting the concept of health promotion both within and outside the health department. This action is essentially political. The second part is a summary review of the general procedural steps taken to date in Utah in risk prevalence survey activity. We wish to emphasize that the views are primarily distillations of our collective experience in Utah since the spring of 1979. Nevertheless, interactions with other risk reduction groups around the country suggest that the approach we've taken may have some general application.

Support for Your Program: Health Promotion Politics

A brief review of some initial events that contributed to the support of risk prevalence survey activity in Utah may illustrate the importance of capitalizing on opportunities to enhance the image of your health education or health promotion unit.

The spring of 1979 marked a turning point for public health in the State. The department of health was in the throes of a significant reorganization, and James O. Mason, M.D., Dr. P.H., had just been appointed Director by the Governor. Dr. Mason was intrigued by the bold innovations in health promotion undertaken by the Canadians, as reflected in the book A New Perspective on the Health of Canadians (1973). As he began to shape the administrative configuration for his new department, he continually tried to squeeze in a health promotion unit to bring an upbeat, positive approach to public health.

In April of 1979, he created what is now the Bureau of Health Promotion and Risk Reduction. Immediately he began to publicly acclaim that bureau as a critical link in Utah's public health chain. Three months later, he hired a health educator at the University of Utah, Marshall Kreuter, to be Bureau Director and charged him with getting the new unit off the ground. The interactions that took place between Mason and Kreuter during the early weeks of the bureau's existence were crucial since two philosophic points were agreed upon: 1) that specificity in planning and evaluation would not be compromised, and 2) that program efforts should be highly positive and visible. As a result, Gregory Christenson, an Evaluation

Research Specialist, was hired as Associate Director of the bureau. His tasks were to provide technical expertise for program evaluation at the State and to serve as a consultant to local-level health educators throughout the State.

During this time, two significant events were taking place. The first involved the Centers for Disease Control (CDC). The bureau staff had prepared an application for the initial round of risk reduction grants from CDC. Interaction with CDC staff revealed that their philosophy and ours were remarkably congruent, especially concerning the belief that program objectives should be specific and tied to outcomes that were based on epidemiologic data. The second critical event was occurring concurrently: Dr. Mason's administrative staff was developing the State's new health policy. It was organized around the four components of the health field concept: the health care system, the environment, human biology, and lifestyle. In the lifestyle component, health promotion and health education were accorded a major function in the Utah health policy. And, since the format of the document called for measurable objectives in all programs, justification for the collection of valid baseline data was literally a matter of policy. Everything seemed to fit.

We think it is important to point out that, since the inception of the Bureau of Health Promotion and Risk Reduction, bureau staff have engaged in extensive consultation with categorical programs within the State health department (Women, Infant, and Childrens Supplemental Food Program; Early Periodic Screening, Detection, and Treatment Program; Chronic Disease, Communicable Disease, Family Health Services, Nursing, and Vital Statistics) as well as with local health departments. Most of the consultations focused on program planning and/or evaluation assistance. As a result of these encounters, our fellow health professionals seemed to discover that there was something more to health education than managing a film library, giving lectures, and cataloging pamphlets. In addition, considerable collaborative work has been generated and is continuing with faculty and students at local universities through evaluation research efforts and student preceptorships and internships.

All of this activity has generated a very supportive network of colleagues—a network that has greatly enhanced our potential and credibility.

Risk Prevalence Survey Activity in Utah

With philosophic and policy foundations reasonably in place, risk prevalence survey activity in Utah began with a pilot study initiated in the fall of 1979. The technical work (instrument development and methodology) was carried out by Greg Christenson, who collaborated with a health education doctoral student at the University of Utah, Margie Freston.[4]

An original pool of 192 items was generated; they covered 8 contact areas: smoking, personal health history, family health history, physical activity, coping with stress, dietary intake, alcohol consumption, and selected demographic variables. After being reviewed three separate times by expert panels, the questionnaire was reduced to 96 items. We drew the pilot study sample using a random digit dialing technique developed by Dr. Reed Geertsen at Utah State University (see Appendix). Telephone interviewers obtained information about the number, age, and sex of household members and confirmed the mailing addresses. Interviewees were told that the State health department was conducting an important health survey and that they might receive a questionnaire in the mail. There were 1,001 randomly dialed numbers and 576 completed interviews. Five hundred questionnaires were mailed out.

The mailing strategy was quite detailed, and care was taken to create a personal, yet professional appearance. Typed cover letters were presented under the handwritten signature of the Director of the bureau. A telephone number was included so that participants could verify the legitimacy of the survey. The return envelope had metered postage and was addressed to the State department of health. The subject's name and address were typed on the outer envelope, and commemorative stamps were used to enhance the probability that the envelope would be opened! Of the 500 questionnaires that were mailed out, 488 were actually delivered; of those, 448 or 92% were completed and returned. For costs involved, see Table 1.

TABLE 1 – *Cost of Obtaining the Sample and Preparing, Distributing, and Returning the Freston Pilot Survey Questionnaire*

Questionnaires		
Typesetting	$ 175.00	
Printing, collating, stapling	159.00	$ 334.00
Stationery		
Letterhead paper for introductory letter (800 sheets at $55.60/1,000)	44.50	
Envelopes (1,600 at $70.00/1,000)	112.00	
Cards (500 at $.03 each)	15.00	171.50
Postage		
$ .30 x 700 (regular mailings)	210.00	
.09 x 500 (cards)	45.00	
1.08 x 100 (certified mailings)	108.00	
.30 x 448 (metered returns)	134.40	$ 497.40
Keypunch		
$3.00 per subject x 500 subjects		$ 1,500.00
Selection of the Sample		
$3.00 per subject x 500 subjects		$ 1,500.00
TOTAL		$ 4,002.90

Aday et al. (1981), in a state of the art review of health surveys, summarized the advantages of local surveys, as follows:

> Provide information on the needs of people who have not sought care (diabetes, hypertension); permit special studies of particular target groups (Navajos, diabetics, specific age cohorts); provide data which are only available from "asking" people (risk factors); enable information to be collected on a range of correlates and indicators of health care behavior (e.g., Mormons, non-Mormons); and permit well-timed community estimates of the impact of experimental programs.[2, p.835]

(The information in parenthesis reflects critical data we've gathered in Utah from our survey work.)

The Freston pilot generated some interesting data. In Utah, 18.5% of adults smoke cigarettes, 37.3% drink alcohol, 9.2% drink five or more drinks of alcohol more than once each month, 69.9% report no regular physical fitness program, and 10% are overweight. Fewer than 20% wear seat belts on a regular basis (Table 2).

The mean weight for men was 177.6 pounds, they showed an average weight gain of almost 16 pounds since age 20. Women reported a mean weight of 139.9 pounds, which also reflected a net gain of almost 16 pounds per subject since age 20. Other potential nutrition problems were apparent from the data: 37.5% added salt to their food at most meals, and 26.7% drank whole milk instead of low fat or skim milk.

TABLE 2 – *Risk Prevalence: Utah Contrasted With United States*

Risk Factor	% Utahns	% U.S. Residents
Smokers	18.5	33.0
Alcohol users	37.3	67.0
No regular fitness activity	69.9	65.0
Do not wear seat belts	82.0	89.3
Overweight (120% of NCHS* Standard)	10.0	19.0

*National Center for Health Statistics.

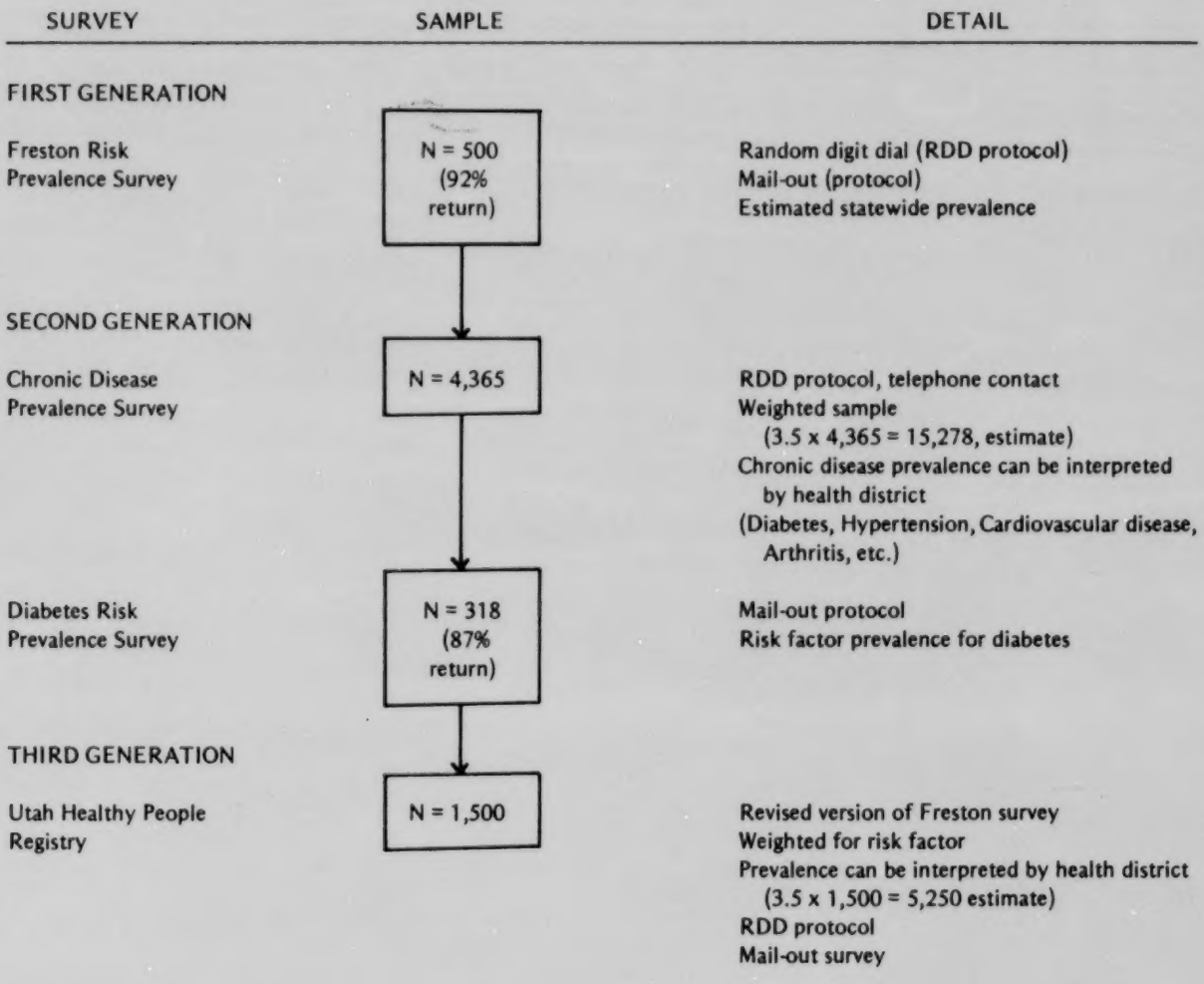
When Mormon* and non-Mormon cultural groups were contrasted, differences in alcohol and tobacco use were apparent, but there appeared to be no differences in mean weight or exercise. Responders who identified themselves as Mormon smoked at a rate of 15.1% in contrast to 28.5% for the non-Mormons. A similar difference was observed for alcohol consumption: 24.7% of Mormons and 73.3% of non-Mormons consumed alcohol.

After the Freston pilot effort, we conducted several important surveys, using the random digit dialing and/or mail-out protocols to ascertain 1) chronic disease morbidity by local health district, 2) risk factor prevalence specifically pertaining to known diabetics, and 3) general risk prevalence for the State by health district (Figure 1).

It is clear that obtaining risk prevalence data has become an integral part of health education and health promotion efforts in Utah. It just seems to make sense if your goal is to take aim before shooting!

*Members of the Church of Jesus Christ of Latter-day Saints (Mormon) are taught to abstain from use of alcohol and tobacco.

FIGURE 1 – *Risk Prevalence Survey Activity in Utah 1979-1981*


SURVEY
SAMPLE
DETAIL
FIRST GENERATION
Freston Risk Prevalence Survey
N = 500 (92% return)
Random digit dial (RDD protocol)
Mail-out (protocol)
Estimated statewide prevalence
SECOND GENERATION
Chronic Disease Prevalence Survey
N = 4,365
RDD protocol, telephone contact
Weighted sample (3.5 x 4,365 = 15,278, estimate)
Chronic disease prevalence can be interpreted by health district
(Diabetes, Hypertension, Cardiovascular disease, Arthritis, etc.)
Diabetes Risk Prevalence Survey
N = 318 (87% return)
Mail-out protocol
Risk factor prevalence for diabetes
THIRD GENERATION
Utah Healthy People Registry
N = 1,500
Revised version of Freston survey
Weighted for risk factor
Prevalence can be interpreted by health district (3.5 x 1,500 = 5,250 estimate)
RDD protocol
Mail-out survey

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Appendix

Methodological Summary for Selecting Sampling Frame for Mail Study

Reed Geertsen

Using random digit dialing, we drew the sample for the study from a statewide population. This technique gives all working telephone numbers an equal chance of being selected, regardless of how long they have been in service, whether they are listed or unlisted, or who they serve. The high proportion of Utah households with telephones (over 95%) helps to minimize biases found in most sampling frames covering statewide populations. To maximize telephoning efficiency, we identified working banks to numbers by first selecting listed telephone numbers from published directories throughout the State. Numbers were selected proportionate to estimates of working and nonworking numbers in six relatively homogeneous districts in the State. These estimates were made from previous outcomes in studies in Utah, conducted by Dr. Geertsen, that used random digit dialing. We next randomized the numbers by replacing the last two digits in the number with randomly generated digits, using standard computer procedures. Of the 1,011 numbers initially dialed, 382 or 37.8% had to be excluded because they were nonworking or nonresidential.

To safeguard further against unequal probability of selection for certain households, interviewers verified that each number reached was a home residence before conducting the enumeration interview. They also checked for the presence of a second nonbusiness telephone number in the home, such as a separate phone for an aged parent or a teenager. Where more than one private number was indicated, interviews were terminated or continued according to a fixed randomization procedure. A total of 576 interviews were successfully completed, for a completion rate of 91.6%. Of this total, 18 were eliminated as ineligible (under 21 years of age, 2 working numbers in the same household in cases where fixed randomization procedure called for termination of interview, temporary quarters, students in dorms). Another 42 completed interviews were excluded because the interviewees exceeded the 75-year-old age cutoff point established for this study. Another 15 households were randomly deleted to reduce the sampling frame to the desired 501 households.

Only 53 telephone numbers failed to produce household information because a person refused to talk or had a disability that prevented it or because there was no answer on repeated calls. Figures from the telephone company were used to estimate what proportion of the numbers never reached were likely to be unreachable because they were test numbers, pay telephones, summer homes, churches, or the like. The potential number of reachable households was then determined and is included in the number given above, which was used in calculating the completion rate. All of the enumeration interviews were completed during the first 2 weeks of September 1980.

CALCULATION OF COMPLETION RATE: 576 (1,011 - 382) = 576/629 = 91.6%

Baseline Risk Assessment Survey: Pennsylvania's Experience With the County Health Improvement Program, A Cardiovascular Risk Reduction Project

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Program History

The County Health Improvement Program (CHIP) was initiated by the Pennsylvania Department of Health in collaboration with the University of Pennsylvania in December 1977. The Program is a long-term research effort devoted to ascertaining the effectiveness and cost of preventing cardiovascular disease. Two large-scale community studies laid the groundwork for this effort. These studies—the Stanford three-community study and the North Karelia Project in Finland—demonstrated that community-based programs that use multiple health education strategies can lead to significant reduction in the risk factors for cardiovascular disease.

CHIP is a cooperative program involving two major universities, a small college, the Department of Health, and a private health media firm. The program will be implemented over 6½ years in Lycoming County, a county of 115,000 residents located in north-central Pennsylvania.

To date, our program has completed 1 year of activities in the field. It attempts to use existing resources and channel these resources into a wide variety of community agencies and institutions. Programs have been developed in four settings or areas: mass media, health care, worksites, and community organizations. Programs are planned for the schools. Figure 1 illustrates the framework used to plan the CHIP program.

Research Design

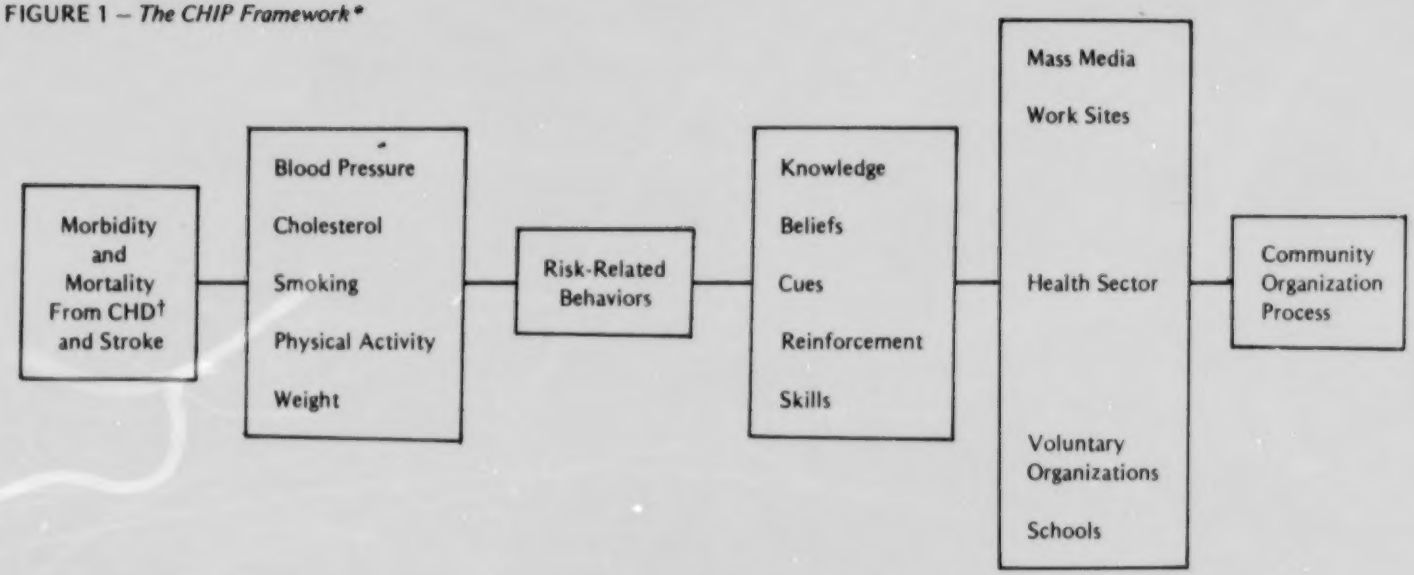
The goal of CHIP is to determine the feasibility of community-based cardiovascular risk reduction program. The key research questions addressed in the evaluation design are as follows.

- Has there been an increase in risk reduction activities as a result of our program?
- Have there been any changes in beliefs, attitudes, and behavior related to smoking, hypertension, diet, exercise, and weight?
- Have there been any changes in the levels of risk factors for cardiovascular diseases?
- Have there been any reductions in morbidity and mortality from coronary heart disease and stroke?
- Can these results be achieved in a cost-effective manner?

To answer these questions and evaluate the impact of CHIP, periodic surveys will be done in Lycoming County and in a matched control county, Franklin County. The research design is a nonequivalent control group design that compares trends or changes in Lycoming County with those in Franklin County. Table 1 illustrates the types of data collection efforts that will be undertaken to assess the effectiveness of the program.

To assess changes in morbidity and mortality, cardiovascular disease registries will be established in both counties. Changes in risk reduction program activities will be monitored by means of the Community Resource Inventory, a biannual

FIGURE 1 – *The CHIP Framework**



Reviews of epidemiologic, behavioral, and sociologic literature led to selection of risk factors and channels affecting risk factor change through changes in behaviors and knowledge, cues, reinforcement, and skills.

Reviews of national data and baseline survey led to choosing programs for each channel that were targeted to groups most in need.

Reviews of community organization literature led to social planning perspective for implementing the project.

*The steps from left to right illustrate the development of theory; reading the diagram from right to left illustrates the implementation process.

†CHD = Coronary Heart Disease.

TABLE 1 – *Chart of Data Collection Efforts, the County Health Improvement Program*

Area	Measurement Technique*	Period of Data Collection†			
		1980	1983	1985	1987
Lycoming County (intervention begun 7/80; will terminate 12/86)	RAS	X	X	X	X
	CRI	X	X	X	X
	CHD-SM	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
	Registry		XXXXXXXXXXXXXXXXX		
Franklin County (reference county; no intervention)	RAS	X	X	X	X
	CRI	X	X	X	X
	CHD-SM	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
	Registry		XXXXXXXXXXXXXXXXX		

*RAS = The Risk-Assement Survey, designed to measure changes in risk factors, beliefs, subjective norms, behavioral intentions, and specific risk-related behaviors; CRI = The Community Resource Inventory designed to measure change in the risk-reduction programs and activities of organizations such as industries, health agencies, social and civic clubs, etc.; CHE-SM = measurements of coronary heart disease and stroke mortality; Registry = a registry designed to measure incidence or new cases of coronary heart disease and stroke.

†X = Period of Data collection confined to 1 year, XXXX = continuous data collection.

survey of industries and community organizations. Changes in beliefs, attitudes, behaviors, and risk factors will be assessed by a risk assessment survey, a sample survey of residents in Lycoming and Franklin counties. A baseline Community Resource Inventory and the risk assessment survey were completed in 1980. A manual that details the methodology of the Community Resource Inventory has been prepared and is available upon request. The methodology and results of the risk assessment survey are presented below.

Methodology

The risk assessment survey serves three main purposes. First, comparing changes in Lycoming County with those in Franklin will enable us to assess the effects of the intervention. Secondly, baseline assessments of beliefs, behaviors, and risk factors will enable us to target the intervention activities to the county. For example, the baseline survey indicated that many of the smokers believed it unlikely that they would succeed in their many attempts to quit smoking. Media messages will be aimed at increasing smokers' confidence in their abilities to quit and teaching smokers specific practical skills for quitting. The third purpose of the survey is to describe trends in beliefs, attitudes, behavior, and risk factors that, along morbidity and mortality data, may help to explain the role of risk factor change in the recent downward trend in coronary heart disease and stroke in the United States. CHIP data, obtained from urban and rural areas in Pennsylvania, will provide complementary data on geographic and socioeconomic diversity from the cardiovascular risk reduction community studies in California, Minnesota, and Rhode Island.

The baseline risk assessment survey in Lycoming and Franklin counties was conducted in February, March, and April 1980. Using local telephone directories, we selected a stratified random sample of adults 25 to 64 years old. Individuals were contacted by telephone and asked to come to a screening clinic, where a questionnaire was administered and cardiovascular risk factor measurements were taken.

CHIP is planned as a 6½ year intervention period; it began in 1980. Subsequent risk assessment surveys will occur in 1983, 1985, and 1987. Two types of samples will be used at each survey period. A longitudinal cohort of 600 people selected from the baseline risk assessment survey will be resurveyed in each county. The cohort will allow a more sensitive measure of change as well as analysis of how changes occur within individuals. A cohort study will answer questions such as, "Do individuals who quit smoking make other lifestyle changes?"

The one drawback to a cohort design is that the interview or measurement process may influence lifestyle change. To avoid this drawback, independent random samples will also be selected. This will permit us to evaluate the effect of the intervention on a community basis.

Before we started the baseline survey, a media campaign involving radio, television, and newspapers was conducted. Physicians were informed about the survey by personal letters and presentations to the county medical societies.

The process of recruiting individuals for the survey began with an introductory letter followed by a phone call 5-7 days later. During the phone call, an appointment was made at a clinic, where a questionnaire was to be administered and physical measurements taken. A followup letter confirming the clinic appointment was then mailed, and individuals were called 1 day before their appointment as a reminder. All individuals who attended the clinic were sent individually signed thank-you letters.

Data were collected at screening clinics established by the Department of Health for the survey. Screening sites were located in hospitals, schools, churches, and State health centers. Clinics were held during the day and in the evening to accommodate people who worked during the day. During the baseline survey, there were 20 clinics in Franklin County and 18 in Lycoming County.

At the clinics, subjects completed a consent form and a self-administered questionnaire. Then they proceeded to stations, where blood pressure measurements, blood samples for determining total and high-density lipoprotein cholesterol, and height and weight measurements were taken. The final step was an exit interview. Subjects were thanked for participating, informed and counseled about risk factors, and given a packet of educational materials on blood pressure, smoking, diet, and exercise. They were reminded that the risk factor measurements would be sent to their designated physician in 3-4 weeks. The entire procedure took approximately 50 minutes to complete.

The questionnaire contains items to assess the prevalence of behaviors related to smoking, high-fat and cholesterol diets, hypertension, and physical activity. Knowledge and attitude items were included only for three primary risk factors. The theoretical model used to design the attitudinal questions is the Behavioral Intent Model described by Fishbein and Ajzen. A set of items was designed to measure beliefs about the effects of changing risk-related behaviors, perceived family and peer support for a respondent's preventive behavior, and intention to change specific behavioral patterns.

The number who participated in the survey was 1,373 in Lycoming County and 1,395 in Franklin County. Approximately one-third of the sample was ineligible, and another one-fifth refused to participate, resulting in response rates of 53% in Franklin County and 57% in Lycoming County.

To determine possible bias resulting from nonresponse, a sample of one hundred nonparticipants was called in both counties. A short questionnaire was administered; the results of this study will be compared with the baseline risk assessment survey findings.

Data Analysis Plans

The first step in preparing the data for analysis was to weight the age-sex stratum so that the sample data reflected population values. For the baseline survey, the sample was stratified such that equal numbers of people were drawn from each of the six age-sex strata (males and females, ages 25-38, 39-52, and 53-64). This was done to achieve a larger number

of people in the older age group than would have been selected under a simple random-sampling scheme. Thus, the reliability of the estimates for the older age strata was improved.

Recent population estimates were used to weight the sampling data. If the 1980 age-sex census data for Lycoming and Franklin counties indicate that these weights are inappropriate, the data will be re-weighted with these values.

The first questions to be addressed in the data analysis are, "How similar are the intervention and reference counties in terms of risk factors?" and "Are the values obtained in these surveys similar to the findings of national surveys and other community studies?" As a first step, averages and proportions were calculated for all of the variables. A quick examination of the data for Lycoming and Franklin counties showed surprising similarities.

In answer to our second question, about the comparability of our surveys to other studies, the results of the national Household Interview Survey and the Health and Nutrition Examination Survey were examined along with the results of community studies. A comparison of data from the 1960's and early 1970's with the CHIP survey pointed to substantative differences in the risk factors. However, more recent studies found rates for hypertension control, smoking, and cholesterol very similar to the preliminary estimates of the CHIP survey.

The data will be further analyzed. One of the purposes of the baseline survey was to provide information for planning interventions. To target our intervention activities, we need to know the demographic characteristics of undetected hypertensive people, smokers who are willing to quit, and people who consume high-fat foods. An analysis of the beliefs that are most closely associated with a specific behavioral intention will indicate what messages need to be emphasized in media and worksite programs.

Resource Requirements

At this point, CHIP has just begun to analyze the data. By June of 1982, analysis will be complete, and the findings published. The entire process from questionnaire design to data collection took approximately 1 year. The effort to coordinate the various organizations involved in the survey was considerable. The University of Pennsylvania was responsible for the overall research design, including the questionnaire design and data analysis. Pennsylvania State University, located in the central part of the State, was responsible for drawing the sample, recruiting and scheduling subjects at the clinics, and coding and editing the data. The local project office provided public information about the survey. The central office of the Department of Health coordinated the entire process and worked with the local offices to schedule and conduct the screening clinics where the data were collected. The costs for conducting the survey in other counties totaled approximately $300,000.

Issues and Considerations for Planning Prevalence Surveys

Substantial resources were required to conduct the CHIP baseline risk assessment survey. Given the long-term nature of the intervention and the amount of intervention activity planned for the project, we feel that the expenditures are well justified. With a massive program effort, with activities in schools, worksites, community agencies, and physician offices, we expect to see significant changes in risk factors after a 6½-year period.

A less costly method for evaluating risk reduction programs might be used and should be considered in programs with limited funds for interventions. For example, 1 year after the start of the mass media program, a telephone interview survey was conducted in Lycoming County. The purpose of the survey was to assess the extent to which the first 9 months of the media campaign activities created awareness of CHIP and a special hypertension screening event. A systematic random sample of 1,187 telephone numbers was selected. Over a period of 7 days, six interviewers completed interviews with 83% of the eligible people in the sample. A report of the survey was written 3 months later.

Clearly, this telephone interview survey required considerably fewer resources than the risk assessment survey. The methods and quality of data were appropriate for the purpose intended. The report indicated that 10% of the sample was aware of a new health program in the county and could name CHIP as the new program. The data also indicated that newspapers, rather than the radio, were the most often mentioned source of information. Based on this survey, the future media campaigns will attempt to take greater advantage of newspapers and reduce radio activities. Thus, the telephone survey served its purpose of midproject evaluation—helping the media planners decide how to modify their strategies to reach the community with information about CHIP.

The prevalence of risk-related behaviors in Lycoming County could have been assessed by means of a telephone interview survey similar to the media awareness survey. The outcome measures for evaluating the effectiveness of CHIP would have been self-reported behaviors rather than actual medical measurements of risk factors. Thus, although the evaluation costs would have been less, the validity of the results would have been more questionable. The issue of which methods to use in collecting and analyzing the data is not easy to answer. A risk assessment survey similar to the one done in Pennsylvania does take considerable time and effort. We received a great deal of consultation from epidemiologists, statisticians, and behavioral scientists before designing the survey. The telephone recruiters and clinic staff were trained and closely monitored to assure conformity to the research and medical protocols. This type of quality control is essential in a research program with a large-scale intervention component. Such an elaborate evaluation design may not be appropriate for risk reduction programs that receive only minimal funding for intervention and affect only a very small proportion of community residents.

Developing a Survey Instrument for the Risk Reduction Prevalence Survey

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This morning you heard an excellent account of the Utah experience with risk prevalence surveys. What I would like to do very briefly is to share with you the methodology for developing the instrument and some of the special caveats we think we came across in developing that instrument.

One of the tasks of the Utah statewide risk reduction program was to develop a descriptive survey instrument which would generate information regarding selected self-reported behaviors known to be risk factors related to cardiovascular disease. As Dr. Kreuter indicated earlier, we are extremely pleased with the survey instrument and its ability to establish baseline data for the planning, implementation, and evaluation of health promotion and disease prevention programs. We hope to use this instrument to monitor behavioral changes as they are influenced by educational programs.

The instrument is a written questionnaire composed of 109 items appropriate for adult respondents ages 21 to 75 years. The questionnaire requires approximately 30 minutes to administer. Information generated by the survey is designed to reveal epidemiologic information regarding incidence, prevalence, onset, and duration. In addition, information regarding patterns or styles of behavior will be obtained for selected risk categories. Cardiovascular risk categories surveyed included family health history, cigarette smoking, dietary habits, physical activities, alcohol consumption, coping with stress, and personal health history. Selected demographic information was also obtained.

The development of a risk prevalence survey instrument is grounded in psychometric theory and is based on six phases; it included the following:

1. Identification of pertinent risk factors. A library search was conducted to identify and classify those behaviors related to cardiovascular disease. Additionally, the search provided a review of the work done to date on the development of survey instruments that assess risk factors.

2. Determination of the questionnaire format. This is a very important part of the process if you intend to increase the reliability or the return rate. As you've seen, our return rate for the pilot survey was 92%. After we had generated a first pool of potential questionnaire items, several sample survey formats were considered and tested on a

group of individuals. Scaling, grouping, sequencing, and flow were also evaluated. The questionnaire format most appropriate for eliciting the desired information and response was then selected.

3. Developing an item pool. Questionnaire items were generated from information obtained from literature review, interviews with experts, examination of questionnaires in related health fields, and personal perception. (Incidentally, the literature review and justification of the items selected are available, and we will be glad to share them.)

4. Refining the instrument. Preliminary drafts of the items for the pool were written by three health professionals and two instrument design experts. The reviewers were asked to evaluate the content, appropriateness, and clarity of the items in relation to the survey's goals. We intended to establish the readability at the eighth-grade reading level. The preliminary instrument was tested on a small group of approximately 20 individuals, to recheck the readability and the flow and sequencing of items in the questionnaire.

5. Establishing content validity. The final preliminary draft of the instrument was submitted to a panel of experts in the fields of medicine, epidemiology, and instrumentation. They were asked to review the instrument and judge the range and balance of the questions in measuring behavioral risk factors for cardiovascular disease. Since the assessment of content validity is essentially a matter of judgment, a team of judges was engaged for this purpose.

6. Establishing reliability. The program that we used is entitled the Fortop Item Analysis Program. This program uses the alpha coefficient as the computational procedure for assessing reliability which in some cases has been shown to be superior to the odd-even or test-retest reliability methods. That's pretty much the procedure for the development of the instrumentation.

As Dr. Kreuter indicated, we have sent our first round of surveys out, followed by a post card. Our return rate at the present time is 50%. With the two additional follow-up mailings we hope to increase that to an acceptable level, hopefully above 85%. There are a number of things that we think encouraged the high return rate.

1. Survey appearance is important; including the design of the cover, the type of print, and the format of the items. Consult frequently with your printers, layout artists, graphic designer, and statisticians.

2. That the instrument be based on a sound measurement theory and on sound epidemiologic information is important.

3. The nature of your audience is important. In dealing with special populations, the choice of language may affect the participants' interpretation and response.

4. It's important to ensure confidentiality. Design the instrument so that there's no question about its confidentiality. In Utah that's a very important issue.

5. We believe the random digit dialing process worked very well for us in establishing a representative sample. That procedure has been written up and is available upon request.

6. I think it's very important to delineate procedures for matching returned surveys with survey participants, while still ensuring anonymity of responder and avoiding unnecessary duplication and the like.

7. Finally, networking is very important. Work closely with other departments such as the bureau of chronic diseases, diabetes, hypertension, or other programs in establishing baseline data; it is important to establish questions designed to serve multiple programs. Pooling resources and manpower enabled us to keep survey costs within the projected budget.

I would like to refer briefly to the costs involved. Total cost for the development of the instrument, excluding computer time, was about $4,000 for the original sample. (The sample size was 500.) I can give you a very quick breakdown

on that. Typesetting, collating, and stapling cost approximately $234. The stationery, including the letterhead, the envelope, and the cards, was about $171. At the time of our mail-out, postage was $500. The keypunching cost of the original sample (N=500) was estimated at $3 per subject. With a sample size of 1,500, which we are now dealing with, the cost is estimated to be approximately $1.35 per person for keypunching. Selection of the sample, perhaps, is the most expensive and, at the same time, one of the more important procedures of this survey. The cost involved in the random digit dialing selection process was $1,500.

From our experience in Utah, we believe that establishing or setting up the baseline data and the development of an instrument go a long way in promoting and selling to the public the need for risk reduction. The process has both political as well as program benefits.

Health Education-Risk Reduction—Colorado

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Introduction

A reduction of cardiovascular and cerebrovascular mortality has occurred in the United States during the last decade. In explaining this phenomenon it has been pointed out that:

- Per capita use of tobacco is decreasing
- Lesser amounts of saturated fats are being consumed
- More people are controlling their blood pressure
- More people are exercising

All of these indicators strongly suggest that a widespread change away from harmful lifestyles has begun in the United States. However, as was noted in a *New England Journal of Medicine* editorial, "Over-interpretation of this temporal relationship would be folly at present since many other risk factors, environmental conditions and treatment approaches have changed."[1] In light of this statement, it is apparent that substantiation of the effects of healthful lifestyles is necessary prior to investing in lifestyle-changing health promotion programs with complete confidence.

Confidence can only be gained incrementally by a combination of controlled studies and careful monitoring of health events and behaviors over time. The surveillance of mortality supplemented by the surveillance of morbidity can be instrumental in pinpointing health problems in target populations that should be addressed. At the same time, changes in lifestyle, i.e., health risk behaviors, must be monitored to document their effect on morbidity and mortality patterns and to identify harmful health behaviors in specific populations that could be improved to reduce the incidence and prevalence of premature death and disability.

To encourage the development of programs to reduce health risk factors in the population and to develop mechanisms for monitoring health status, the Federal Government has funded the Health Education-Risk Reduction (HE-RR) Grant Program administered by the Centers for Disease Control (CDC). The program has three national goals, which are:

- To increase the awareness in the general population of the health hazards of smoking, alcohol abuse, obesity, stress, and hypertension, as well as other risk factors relating to preventable health conditions and diseases.

- To provide high risk groups, such as adolescents, pregnant women, the elderly and minority populations, with the opportunity to make informed, responsible decisions that will affect their health.

- To reduce the incidence and prevalence of risk factors and bring about a measurable reduction in premature death and disability.[2]

In October 1979, the Colorado Department of Health received a grant from CDC to begin a HE-RR Program in Colorado. The purpose of the Program was to reduce the risk of premature death and disability associated with smoking, alcohol abuse, obesity, hypertension, stress, and other preventable health conditions and chronic disease among Colorado citizens.

Two of the basic requirements or elements of the program, as outlined in the HE-RR Grant, were:

- Establishing methods to determine the prevalence of risk factors in communities and selected target populations.

- Identifying existing sources of data relating to chronic disease morbidity/mortality and the prevalence of risk factors to assist in the planning of improved surveillance. (Surveillance of disease is the continuing scrutiny of all aspects of occurrence of a disease pertinent to effective control.)[3]

These program requirements coincided with the relatively high priority placed on the collection of an adequate data base to guide health program planning by the Office of Health Care Services within the Colorado Department of Health (CDH), particularly in the assessment of the prevalence of health risk factors.

Statement of the Problem/Project Goals

A review of existing data sources and pertinent literature currently available revealed that the information needed to meet the health risk factors for collecting data on guidelines of the HE-RR grant did not exist. The information that was available did not address the suggested variables to be collected, as outlined in the HE-RR grant, was limited to specific populations, and/or was not suitable for comparison and/or aggregation with data being gathered in other States and geographical areas. It was also determined that there existed no widely accepted, standardized means for determining the prevalence of the risk factors related to preventable health conditions.

Given the limitations of available health risk data, a task force was formed to advise CDH about the most appropriate methods for collecting health risk information. Based on the need for health risk information to satisfy HE-RR Grant Program requirements and the advice of the task force, CDH made the decision to initiate a project to collect additional health risk data. A survey of the adult (18 years of age and older), noninstitutionalized population of Colorado was the vehicle chosen to implement the project since population-based surveys repeated over prescribed periods of time are a cost-efficient, easily facilitated method of providing quality information. Although the main objective of the project was to assess the prevalence of specific health risk behaviors among adult Coloradans, there were four primary goals delineated by program administrators. They were:

- To measure and monitor in a statistically valid fashion the changes our society will make in its health behavior over time resulting from broad, ill-defined societal norms and not from specific and/or localized health promotion projects.

- To establish baseline data as a standard against which surveys of smaller geographical, racial, socioeconomic, or other population strata within Colorado may be compared. (Note: This method of comparison potentially can spotlight intriguing differences in health risk behaviors that may identify a population that can be targeted for health promotion projects or other efforts toward change. These data can also be used to assess how Colorado's health risks compare with those of the nation as a whole and those of other States.)

- To develop a standard health risk prevalence methodology and expertise for use by others to survey smaller population groups in Colorado.

- To generate data to become the focus for informed participation in health risk reduction planning by various organizations and funding agencies in Colorado.

Methodology

Survey Method

The three methods considered for gathering the prevalence data were mail surveys, face-to-face interviews, and centralized telephone interviews. Four basic issues addressed in assessing the merit of each survey method were:

- Cost and time efficiency
- Standardization of interviewer behavior
- Survey completion rates
- Noncoverage bias.

In weighing the relative merits of these survey methods, telephone interviewing was selected because of the cost efficiency, rapid completion time, and consistency it offered.[4] These advantages, meshed with the cost and time limitations of the project, made telephone interviewing the logical choice.

Sample Size Determination

- For the purposes of this survey, it was determined that the estimate of the prevalence of health risks must be at least 95% precise at the 95% confidence level, i.e., the results of the survey are within 5 percentage points of the true value for the total population about 95% of the time.

- Consultation, advice, and technical assistance with the choice and design of the methodology as well as with the data processing were provided by Jan Lehman, Acting Director, Health Statistics and Vital Records Division, Colorado Department of Health.

- This concept of precision is actually a measurement of error. It indicated how closely we can reproduce from a sample the results which would be obtained if a complete census of the population were taken, using the same methods of measurement, survey design, interview procedures, and supervision and having all other things equal. Too small a sample size would yield unreliable results; conversely, too large a sample size would waste resources. It should be noted that there is a chance that the results obtained from the sample selected will be in error by more than the desired amount regardless of the sample size chosen. In this particular survey, the choice of a 95% confidence level allows a 5% chance of this happening.

A random sample of at least 425 individuals was determined adequate to represent the general adult population of Colorado and to describe the distribution of the population with respect to age, race, and geographic area. This sample size allows researchers to make generalizations about the adult citizenry throughout the State. An example would be determining the prevalence of cigarette smoking among the entire adult population of Colorado. It also will allow certain breakdowns to be made into major data categories, such as sex and age groups. However, while these large demographic categories could demonstrate trends, this information will not be as reliable as data from the entire sample.

The prevalence of an attribute should be between 10% and 90% for the entire sample for it to be estimated correctly by this survey. The data gathered in this survey will not be useful in accurately analyzing small subgroups of the population, such as individual counties, or relatively rare characteristics in the population, such as diabetes. However, the results of the survey may spark investigations of characteristics within subpopulation groups based on the limited information available. Thus, while all the information from the survey is interesting, the information can only be generalized to the entire population of Colorado with varying degrees of reliability, depending upon the prevalence of the characteristic. The information from the survey is to be used with care and discretion.

Sample Selection Procedures

Random Digit Dialing: In order to randomly select a sample of individuals to interview, the technique of random digit dialing (RDD) was chosen. RDD is a random generation of four-digit numbers to be matched with the telephone prefixes to be surveyed. Initially, each prefix is assigned the same number of randomly generated, four-digit numbers. All numbers generated are called, and a contact attempt record is maintained for each. Nonworking and nonresidential numbers are discarded as they are encountered. Since telephone prefixes are composed of varying proportions of residential numbers, the final sample is apportioned correctly across prefixes through the number-discarding process. The automatic apportioning inherent in this technique eliminates any need for guesswork and upfront documentation of residential densities within prefixes.

Two important conditions must be met when RDD is used:

- The set of prefixes to be surveyed must be completely specified prior to the generation of four-digit numbers. If not, residences in excluded prefixes will not have any chance of being surveyed.

- There must be absolutely no adjustments at the prefix level (i.e., changing of prefixes for the total number of prefixes during the four-digit number generation as this would produce a disproportionate sample).

RDD provides a random sample based on all households having telephones and provides for greater representation than do samples selected from telephone directories. Unlike samples derived from directories, unlisted and newly listed telephone numbers become part of the universe from which the sample is selected, and there is no possibility of duplicate coverage from duplicate listing and directory overlap.

The primary drawback to RDD is that many numbers must be called in order to locate residential telephones. This disadvantage can be minimized by obtaining a current bank of usable residential numbers within the area to be surveyed.

Eligible Respondent Selection: For this survey, eligible respondents, or the individuals selected to be interviewed, were those 18 years of age or older living at least 50% of the time in the household contacted. Since the individual was the unit of analysis, the respondents were selected at random from all eligible household members to ensure against any bias due to the time of day that the call was received for household telephone-answering patterns. Persons answering the phone were not necessarily the person to be interviewed.

To determine who would be the respondent within each household, the interviewer first made contact with a permanent member of the household who was 18 years of age or older. This individual was considered the "initial contact" and was asked to provide information about household membership. The initial contact and the interviewer constructed a respondent selection roster containing a chronological list of the first names of each eligible respondent within the household, starting with the oldest. Using a set of six random selection tables, randomly assigned to each survey, the interviewer then selected a respondent from the roster and made whatever arrangements were necessary to conduct an interview with that person.

Interviewing Process

Interviewing activities began April 16, 1981, and ended May 8, 1981. This timetable ensured that all surveys were completed in such a way that they provided a snapshot in time. An interviewing schedule that was lengthy or drawn out would put the results of the survey at risk of reflecting a changing rather than a static population.

The Center for Social Research and Development (CSRD) of the University of Denver was contracted to conduct the actual telephone interviewing process. CSRD recruited and hired one project supervisor, one data editor, and 10 telephone interviewers.

All interviews were conducted from CSRD facilities. Interviewers were scheduled to work 7 days a week for the entire survey period (except Easter). Interviews were conducted from 11 a.m. to 10 p.m. during weekdays and from 10 a.m. to 3 p.m. during weekends. Peak work times were between 5 p.m. and 10 p.m. on weekdays. Interviewers worked a total of 453.5 hours during the interviewing period. Each interviewer was required to complete one survey for every 1½ hours of work.

Data editing involved the reading of all completed surveys to ensure that all information required was collected and recorded and that all skip patterns throughout the survey were followed in a logical manner. The data collection problems encountered by interviewers were identified and resolved by the data editor. To ensure that all interviews were indeed conducted and to establish some measure of test-retest reliability of the survey, 47 (or 10%) of the respondents were retelephoned and reasked factual (rather than attitudinal) questions by the data editor. These responses were then compared with the original answers to identify any inconsistences. Results showed 100% consistency.

Costs

The average cost per completed survey was $17.94. This is based upon a project cost (telephone interviewing only) of $8,415.00, and a total of 469 completed surveys. This does not take into account data processing and the time and salaries of the investigators, i.e., CDH staff. The cost for data processing was approximately $600.00. The estimated staff time involved in the project was approximately 200 hours for the project director and clerical staff combined, for a total estimated salary expenditure of approximately $2,400.00. (This figure includes only survey administration, not research and development.)

Respondent Contacts

To obtain a minimum of 425 completed surveys, a total of 2,754 telephone numbers were generated. Of these numbers, 1,714 were verified as nonworking by telephone operators (either out-of-order or unassigned), 189 were nonresidential numbers, and 82 were temporarily out of service. The total number of telephone numbers resulting in no contact was 1,985. Table 1 summarizes this information.

TABLE 1 – *Summary of Numbers Resulting in No Contacts*

Number Classification	Number of Telephone Numbers
Verified nonworking numbers	1,714
Nonresidential numbers	189
Temporarily out-of-service	82
TOTAL	1,985 (72.1% of all generated numbers)

Of the 769 total possible contacts attempted, 121 individuals refused to take part in the survey, 5 surveys were terminated by the respondent after questioning had begun because of the personal nature of the questions, 174 parties could not be contacted after 8 callbacks at different times of day over at least a 2-day period, and 469 surveys were completed. The completion rate (based on a denominator of 769) was 15.73%. The percentage of surveys terminated in progress was 0.65% and the percentage of numbers with no contact after 8 callbacks was 22.03%. Table 2 summarizes this information.

TABLE 2 – *Summary of Numbers Resulting in Possible Contacts**

Number Classification	Number of Telephone Numbers
Completed surveys	469 (61.0% of all possible contacts) (78.8% of actual contacts)
Refusals	121 (15.7% of all possible contacts) (20% of actual contacts)
Terminations	5 (0.7% of all possible contacts) (0.8% of actual contacts)
No contact after 8 callbacks	174 (22.03% of all possible contacts)
TOTAL	769 (27.9% of all generated numbers)

*Includes all contacts and numbers with no contact after 8 callbacks.

The expected refusal rate of contacts in RDD interviews is 13%-15%.[5] In this survey, the refusal rate of contacts was approximately 16%. While many of the refusals were immediate and the contact merely hung up the phone, a number of refusals were caused by the respondents' suspicion about the legitimacy of the survey. To reduce this problem, an introduction stating the origin and purpose of the survey was carefully developed, and interviewers were authorized to give out the CDH telephone number. Collect calls were accepted regarding the survey. A total of nine verification calls were received.

The completion rate in RDD surveys always should be approximately 75%. In this case, the completion rate was only 61.0%. This discrepancy can be attributed to the relatively high frequency of no contacts after 8 attempts, as refusals and termination percentages were similar to those experienced in other applications of the RDD technique.[5] This issue will be discussed further in this document.

Instrumentation

Instrument Development

The survey questionnaire was compiled by drawing from three key sources. The CDC developed the Common Data Items that composed the core of the survey. In these items, the wording and response categories are standardized for the purposes of reproducing comparable information in a number of surveys throughout the United States. When a question was included, that was not a Common Data Item, the most standardized wording possible was used. Second, numerous agencies within the CDH were consulted to aid in the addition of questions to the survey, as were members of the Task Force of the Colorado Health Promotion Consortium. Third, the health risk surveys conducted by New York and Utah were used as models for the development of the Colorado survey.

Preliminary Analyses

Before the actual drafting of the survey, it was necessary to compile the following information:

- A complete list of the desired variables, i.e., risk factors, to be measured by the survey.

- A validation of the importance of collecting each variable, as documented by references in current literature.

- A documented data base from other surveys of the national prevalence of each variable to provide a point of reference for the Colorado data. (Note: For some variables, the only available baseline data were from other statewide surveys. For others, no baseline data were available.)

Once a complete list of variables upon which to base the survey had been compiled, survey questions were written to measure each variable.

Question Inclusion

For assessing whether or not a proposed question should be included in the survey, the following protocol was established:

- Does the question collect information on relatively common conditions?
- Are these data unavailable from any other sources?
- Are these data associated with a chronic disease of a cause of premature death or disability?
- Is the question quantifiable?

If a question met these criteria, it was included in the questionnaire.

Skip Patterns

After all the questions were written, appropriate skip patterns were inserted into the survey to direct the interviewers' questioning, to expedite the interview process, and to eliminate repetitious questioning of the respondents.

Instrument Validity/Reliability

The recommended procedure for validating an instrument that is largely multiple choice and scaled response is to compose a large pool of items and try them out on a subsample of the target population. This pilot or field-test process helps to identify ambiguities in question items and limitations among response categories. Indepth personal interviews, using the survey as a guide, reveal other deficiencies relating to question intent and response interpretation. The question list is then pared down by analyzing responses and identifying those that correlate highly with one another. This process not only increases the validity and reliability of the survey, but also reduces the number of refusals and terminations by making responses to the survey easier.

The Colorado survey instrument was developed with sensitivity to the issues of possible ambiguity in question items and intent, possible limitations among response categories, and the need for validating the questionnaire. The Task Force of the Colorado Health Promotion Consortium and CDC were consulted to review the survey and comment on the shortcomings of any aspect of the instrument. The instrument was cursorily field-tested through 10 face-to-face interviews.

The pilot/field-test process was subverted to some extent by the time and resource limitations imposed (intensive development efforts began in March 1981, and the interviewing process began mid-April, 1981). Although scientific rigor is always desirable, the information required for policy makers is often needed in advance of and for a smaller fund expenditure than what could be generated through totally rigorous procedures. In this instance, it was more useful to gather timely policy-making information that was available *and* reasonably reliable rather than to postpone the input of relevant information until all desirable conditions could be accommodated. This project therefore substituted intensive internal review and expert consensus for the more time-consuming pilot process.

Content Overview

The questions asked in this survey fell within three general categories. They were factual health information, health risk information, and demographic information. Data gathered by the survey will be used to assess the incidence and prevalence of certain health risks as well as the representativeness of the information collected.

The key variables that were the focus of the survey, the data elements collected, and the health risks associated with each as a justification for collecting them are identified in Table 3.

TABLE 3 – *Key Survey Variables*

Key Variable	Data Elements Collected	Associated Risk Factors/Justification
Smoking	Prevalence of smoking Current and past tobacco consumption patterns Age of starting smoking Smoking cessation patterns and rates Brand of cigarettes used Use of filters	Cigarette smoking indicted as a risk factor for: – Cancer of the lungs – Cancer of the larynx – Cancer of the oral cavity – Cancer of the esophagus – Cancer of the pancreas – Cancer of the bladder – Bronchitis – Emphysema – Coronary heart disease – Hypertension – Abortion – Stillbirth – Intrauterine growth – Retardation[6] Cigarette smoke acts synergistically with oral contraceptives to increase the risk of coronary and cerebrovascular disease.[6] Cigarette smoke acts synergistically with alcohol to increase the risk for cancer.[6] Cigarette smoke causes and/or aggravates, allergic responses.
Blood Pressure	Prevalence of hypertension Time since last blood pressure check Population ever told its members were hypertensive Time since they were told Extent and type of treatment modes	Hypertension presents risk for: – Coronary heart disease – Stroke – Disease of kidneys – Disease of the eyes[6]

TABLE 3 (continued) – *Key Survey Variables*

Key Variable	Data Elements Collected	Associated Risk Factors/Justification
Blood Pressure (continued)	Adherence to treatment Reasons for nonadherence	Hypertension presents health problems because: – It is asymptomatic and many hypertensives are unaware of their condition – Many unaware hypertensives do not understand the implications and do not adhere to the treatment regimen
Diabetes	Prevalence of diabetes Family history of diabetes Those ever told they had diabetes By whom they were told Type and extent of treatment modes Extent of urine testing	Diabetes shown to be risk factor for: – Cataracts – Glaucoma – Blindness – Cardiovascular disease – Hypertension – Kidney disease – Ketoacidosis – Skin conditions – Gangrene – Amputation – Perinatal morbidity[8,9] Hyperglycemia may be asymptomatic; many diabetics are unaware of their condition[10]
Exercise	Level of occupational exercise Frequency, duration and intensity of leisure time exercise Frequency of physical recreation	Physical inactivity identified as risk factor for: – Decreased working capacity – Obesity – Coronary heart disease – Stress – Chronic fatigue[6,11,12] Regular exercise positively effects conditions such as: – High blood pressure – Smoking – Diabetes – Obesity – Musculoskeletal problems – Respiratory diseases

The information collected on diabetes is not within the desired precision parameters because the prevalence of the condition is below the 10% prevalence limit required for results to be in the accepted range, as previously discussed. However, this information was very useful to the Chronic Disease Section of the CDH because of the scarcity of data in this area.

TABLE 3 (continued) – *Key Survey Variables*

Key Variable	Data Elements Collected	Associated Risk Factors/Justification
Exercise (continued)		– Stress – High density lipoprotein cholesterol levels[6,8] Most Americans do not engage in satisfactory amounts of physical exercise
Stress	Level of stress Frequency of nervousness Times when respondent unable to work because of nervousness Frequency of irritation with people Ways sought to relieve stress Identification of greatly stressful event in past year	Stress implicated as risk factor leading to: – Fatigue – Headache – Obesity – Absenteeism – Illness – Accidents – Violence – Substance abuse – Hypertension – Heart attack – Stroke[6,13]
Nutrition	Nutritional status of population Current height and weight Frequency of eating: – Red meat – Salty snacks – Desserts and sweets – Between-meal snacks – Breakfast Frequency of salting food	Excessive intake of certain nutrients increases risk of developing conditions such as: – Obesity – Heart disease – Diabetes – Hypertension – Dental caries – Possibly cancer[6]
Alcohol	Prevalence of alcohol consumption Frequency of drinking Total quantity of alcohol consumed Frequency of heavy drinking binges Frequency of driving after drinking	Misuse of alcohol results in adverse biological, psychological, social, and economic consequences for abuser and his family[6] Excessive alcohol intake risk factor for: – Alcoholism – Alcoholic psychosis – Cirrhosis

Stress is an overused term with various definitions and connotations. In this context, it is used to mean those pressures and tensions of behavioral, biological, economic, and/or environmental sources which can lead to psychological and physical maladaptions, if not managed appropriately.[6]

TABLE 3 (continued) – *Key Survey Variables*

Key Variable	Data Elements Collected	Associated Risk Factors/Justification
Alcohol (continued)	Evidence of drinking problems	– Cancer – Cardiomyopathy – Heart disease – Injurious or fatal automobile accidents – Homicide – Suicide – Fetal Alcohol Syndrome[6,14,15]
General Health	Dental practices	Inadequate dental care can lead to: – Dental caries – Peridontal disease – Tooth loss
	Automobile safety practices	Death/disability from motor vehicle accidents
	Job-related illnesses, injuries, and exposure to health hazards	Occupational illness/disability fatality[6] Exposure possibly contributing to: – Skin disease – Lung disease – Cancer – Birth defects – Genetic changes – Heart disease – Sensory deficits – Psychological problems[6,11]
	Incidence of: – Heart attack – Stroke – Emphysema – Asthma – Bronchitis – Cirrhosis of the liver – Cancer	
	Individuals' perception of their own health	
Demographics	Age, sex, and educational and ethnic representativeness of sample Information to spark further research into specific health risks encountered in subpopulations	

Results

Sample Characteristics

When the demographic characteristics of the sample interviewed are compared with those of the general adult population in Colorado, some measure of the representativeness of the information collected can be determined. Table 4 summarizes the demographics collected for the sample and the corresponding demographics from the Colorado 1980 census.

TABLE 4 – *Summary of Demographics*

Demographic	1980 Census Data	Survey Data
Average age of adults 18 years of age and older	41 years	40 years
Sex (adults 18 years of age and older)		
Male	49.06%	38%
Female	50.94%	62%
Race (adults 18 years of age and older)		
White	85.05%	85%
Black	3.20%	4%
American Indian	0.51%	1%
Asian-Pacific Islander	0.95%	1%
Spanish Origin	9.82%	8%
Other	0.47%	1%

These exhaustive and exclusive race categories were derived from the 1980 census standard tape file by Bruce Ellis, Vital Health Statistics, CDH. The "average age" and "race" comparisons are encouraging and indicate, for the most part, that the population surveyed is at least very similar with respect to these parameters to the entire population to which the investigators will generalize.

Table 5 compares survey respondent and Colorado census data[6] on age distribution.

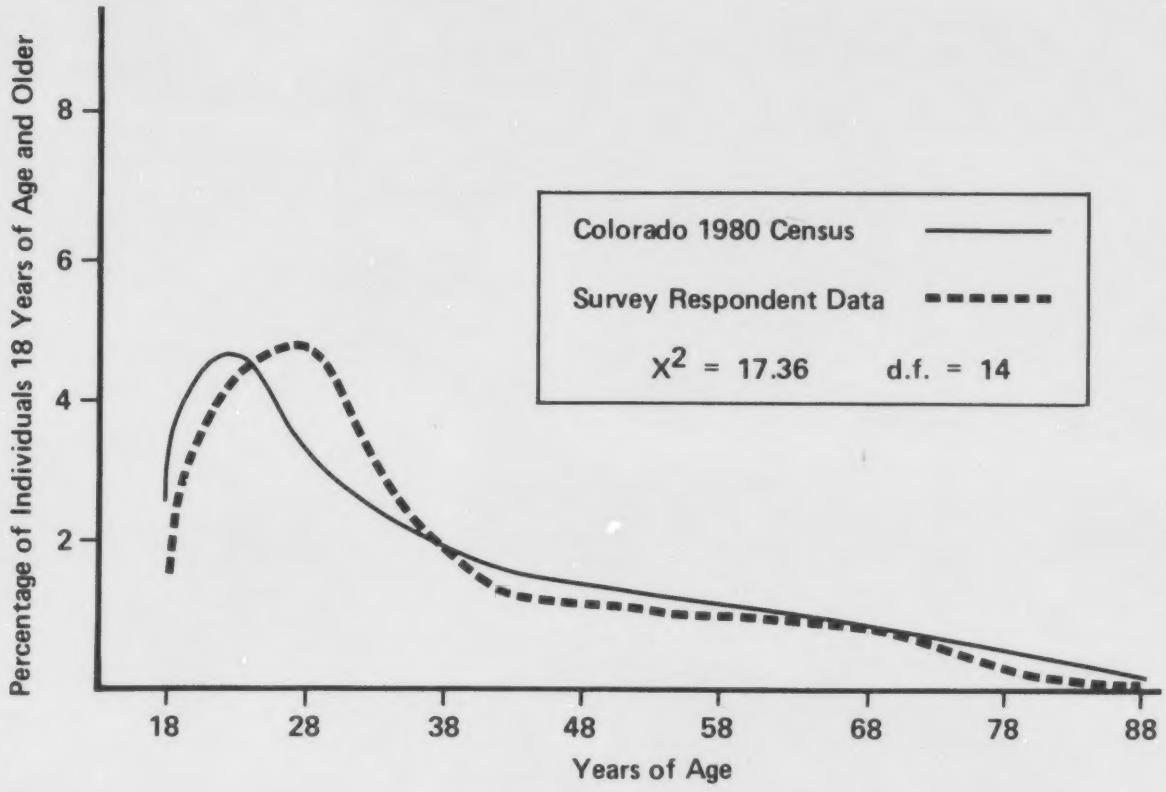
Figure 1 summarizes the data from Table 5 and indicates a chi-square value of 17.36 with 14 degrees of freedom. This value is well within the traditional 5% limit, and indicates there is insufficient evidence to show that information obtained from the survey was from a sample not normally distributed by age.

The most significant difference between the 1980 census and the survey data is the sex distribution. The number of male respondents was approximately 10% less than what was expected, and the number of female respondents was, of course, approximately 10% more than expected. This may be attributable to the fact that more single women than single men have telephones and to the tendency of men to refuse telephone surveys more frequently than women, according to Mountain Bell marketing specialists. This unequal sampling of the male and female populations should be recognized when generalizing survey results about sex-related risks to the entire population.

TABLE 5 – *Age Distribution*

Age	Census Data (% of Population 18 years and older)	Survey Data % of Sample
18	2.68%	1.92%
19	2.88%	1.50%
20	2.90%	2.78%
21	2.86%	2.56%
22-24	8.78%	6.84%
25-29	14.54%	17.95%
30-34	12.83%	15.38%
35-44	16.67%	16.24%
45-54	13.01%	11.32%
55-59	6.04%	6.62%
60-61	2.10%	2.35%
62-64	2.83%	3.63%
65-74	7.14%	7.26%
74-84	3.57%	3.31%
85+	1.17%	0.43%

FIGURE 1 – *Population (1980 Colorado Census) vs Survey Respondent Age Distribution*



Estimates of Health Risk Factor Prevalence

The descriptive statistics that follow are those collected from the respondents interviewed. They are separated by risk factor to provide a profile of the behaviors, beliefs, and/or conditions that relate to specific health risks. The most salient results are summarized for each risk factor.

For each variable a male/female split is presented. While this is the only demographic breakdown that has been made at the present time, it is possible to retrieve specific data for any demographic combination desired.

For many of the variables addressed by survey questions, information from other surveys conducted nationally or in other areas is available. This information is not directly comparable to the Colorado data because of different response categories and different ages of the survey populations. However, data from other surveys are listed in the tables along with the descriptive statistics from Colorado as a point of interest. Several general comparisons between Colorado as a point of interest. Several general comparisons between Colorado and national surveys are made in the narrative that follows.

Smoking

About 36% of the survey respondents are smokers. Approximately 60% of those over age 18 who have ever smoked at least 5 packs of cigarettes are current smokers. They smoke an average of one pack per day, which is approximately equal to the national average.[16] Over 60% of these current smokers would like to quit; an average of 2.3 attempts to quit have been made. An interesting sex difference in smoking behavior is noted in the choice of filter versus plain cigarettes. Approximately 20% of the current adult male smokers surveyed use plain rather than filter cigarettes, while only 7% of the adult female smokers choose plain cigarettes. Table 6 presents data collected concerning smoking behavior.

Blood Pressure

Sixty-five percent of the survey respondents have had a blood pressure check within the last 6 months, which is higher than the nationally estimated level of 57%.[18] Approximately 20% of those surveyed have been told at one time that they have elevated blood pressure; 68% of these have had treatment of some kind prescribed. Of those having treatment prescribed, 91% had medication prescribed as part of their treatment. Twenty-two percent of these have stopped taking their medication, and 3% are taking it less frequently than recommended (which is approximately the same as the national rate of compliance).[18] The two most frequently cited reasons for stopping treatment of any kind are "I was cured" and "because of side effects." Table 7 presents the blood pressure-related data collected.

Diabetes

Forty-one percent of the survey respondents have a family history of diabetes. Only 5% have ever been told by someone they have diabetes. Of these, 32% feel they are still diabetic. Of those reporting to be diabetic and for whom treatment has been prescribed, 37% are taking insulin. Table 8 presents data collected regarding diabetes.

Exercise

Approximately one-quarter of the survey respondents encounter a "great deal" of hard physical work in their job or daily household tasks. Of all the individuals surveyed, 45% exercise more than 3 times a week; 47% of the males and 44% of the females surveyed exercise this frequently. The average frequency of exercising is 2.5 times/week when exercising,

TABLE 6 — *Smoking Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations (Aggregate)	
		Aggregate	Male	Female		
Individuals smoking at least 100 cigarettes in entire life (i.e., those who "ever smoked") (n=469).	Yes	280 (60.0%)	118 (66%)	162 (56%)		54.0%*
	No	189 (40.0%)	61 (34%)	128 (44%)		46.0%*
Of those who "ever smoked," age of onset of regular smoking (n=280).	Never regular smoker.	11 (4.0%)	3 (3%)	8 (5%)		2.0%*
	Average age of onset.	18.6 years	17.2 years	18.6 years		
Of those who ever smoked regularly, those currently smoking (n=269).	Yes	169 (63.0%)	67 (58%)	102 (66%)		33.7%*
	No	100 (37.0%)	48 (42%)	52 (34%)		20.3%*
Of current smokers, number of cigarettes smoked per day (n=169).	Number of cigarettes (1 pack=20 cigarettes).	19.6	20.7	18.9		21.78*
Of those who once smoked regularly but are not currently smoking, time since last smoked regularly (n=108).	Less than 1 year.	20 (18.5%)	10 (19%)	10 (18%)		11.7%*
	More than 1 year.	88 (81.5%)	43 (81%)	45 (82%)		88.3%*
Of current regular smokers, any attempt made to stop smoking (n=170).	Yes	107 (63.0%)	41 (62%)	66 (63%)		60.0%*
	No	63 (37.0%)	25 (38%)	38 (37%)		40.0%*
Of those who have made an attempt to stop, number of times they have tried (n=126).	1 time.	37 (29.0%)	18 (37%)	19 (25%)		
	2 or more times.	89 (71.0%)	31 (63%)	58 (75%)		99.6%**
Of those who have made an attempt to stop, number of attempts made in past year (n=123).	None.	64 (52.0%)	26 (51%)	41 (55%)		32.7%*
	1 time.	42 (34.0%)	20 (39%)	22 (29%)		17.8%*
	2 or more times.	17 (15.0%)	5 (10%)	12 (24%)		8.4%*
Of those who have made an attempt to stop, length of time since *start* of *last* attempt (n=124).	More than 1 year.	73 (59.0%)	28 (57%)	45 (60%)		
	More than 1 month but less than 1 year.	40 (33.0%)	16 (33%)	24 (32%)		
	Less than 1 month.	11 (9.0%)	5 (10%)	6 (8%)		
Of those who have made an attempt to stop, length of time off cigarettes during last attempt (n=128).	More than 1 year.	20 (17.0%)	5 (10%)	15 (20%)	More than 1 month.	29.4%
	More than 1 month but less than 1 year.	48 (40.0%)	25 (50%)	24 (32%)		
	Less than 1 month.	51 (43.0%)	20 (40%)	35 (47%)		70.6%
Of those who currently or ever smoked regularly, use of filter vs. plain cigarettes (n=265).	Filter.	231 (87.0%)	92 (80%)	139 (93%)		
	Plain.	34 (13.05%)	23 (20%)	11 (7%)		

* from a 1978 national survey of individuals 17 years of age and older.[16]
** from a 1980 survey of adult Utahns.[16]

TABLE 7 — *Blood Pressure Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations (Aggregate)	
		Aggregate	Male	Female		
Length of time since last blood pressure check (n=469).	Less than 6 months.	304 (65%)	106 (59%)	198 (68%)		57%*
	7 — 12 months.	65 (14%)	28 (16%)	37 (13%)		20%*
	1 — 2 years.	60 (13%)	28 (16%)	32 (11%)		14%*
	Over 2 years.	37 (8%)	16 (9%)	21 (7%)		9%*
	Never checked.	2 (<1%)	—	2 (1%)		
	Do not know.	1 (<1%)	1 (1%)	—		
Those ever told they have high blood pressure, and by whom (n=469).	No.	372 (79%)	143 (80%)	229 (79%)	70% of those aged 30 - 69 know their blood pressure.**	
	Yes, by a doctor.	90 (19%)	32 (18%)	58 (20%)		
	Yes, by a nurse.	5 (1%)	3 (2%)	2 (1%)		
	Yes, by someone else.	2 (<1%)	1 (1%)	1 (1%)		
Of those ever told they have high blood pressure, length of time since first told (n=97).	Less than 6 months.	9 (9%)	4 (11%)	5 (8%)		18%*
	7 — 12 months.	11 (11%)	4 (11%)	7 (11%)		8%*
	1 — 2 years.	16 (17%)	4 (11%)	12 (20%)		16%*
	Over 2 years.	61 (63%)	24 (67%)	37 (61%)		58%*
Of those ever told they have high blood pressure, those with treatment prescribed (n=97).	Yes.	66 (68%)	25 (69%)	41 (67%)		87%*
	No.	31 (32%)	11 (31%)	20 (33%)		12%*
Of those with treatment prescribed, kind of treatment (n=66).	Medication.	60 (91%)	22 (88%)	38 (93%)		89%*
	Low salt diet.	48 (73%)	16 (64%)	32 (78%)		20%*
	Weight loss.	29 (44%)	9 (36%)	20 (49%)		13%*
	More exercise.	29 (44%)	12 (48%)	17 (38%)		3%*
	Avoid stress.	33 (50%)	15 (60%)	18 (44%)		6%*
	Cut down/stop smoking.	16 (24%)	6 (24%)	10 (24%)		3%*
	Other.	6 (9%)	3 (12%)	3 (7%)		
Of those with medication prescribed, those who are still taking it (n=60).	No.	13 (22%)	4 (18%)	9 (24%)		23%*
	Yes, most of the time.	45 (75%)	17 (77%)	28 (74%)	Yes.	77%*
	Yes, but not as often as recommended.	2 (3%)	1 (5%)	1 (2%)		
Of those with other treatment prescribed, those who are still following it (n=59).	No.	8 (14%)	3 (14%)	5 (14%)		19%*
	Yes, most of the time.	39 (66%)	14 (64%)	25 (28%)		
	Yes, but not as often as recommended.	12 (20%)	5 (23%)	7 (19%)	Yes.	78%*
Of those stopping treatment, reason for stopping (n=14).	Cost.	—	—	—	Too expensive.	2%*
	Cured.	5 (36%)	2 (40%)	3 (33%)	No longer has high blood pressure. No need. Doctor's advise.	28%**
	Just quit.	1 (7%)	1 (20%)	—		60%**
	Side effects.	5 (36%)	1 (20%)	4 (44%)		33%**
	Other.	3 (21%)	1 (20%)	2 (22%)		22%
Of those ever told they have high blood pressure, those whose blood pressure is still high (n=97).	No.	72 (74%)	23 (64%)	49 (80%)		
	Yes.	22 (23%)	11 (91%)	11 (18%)		
	Do not know.	3 (3%)	2 (6%)	1 (2%)		

* from a 1973 national survey of individuals 17 years of age and older.[18]

** from a 1974 national survey.[19]

TABLE 8 — *Diabetes Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations (Aggregate)	
		Aggregate	Male	Female		
Those having family members with diabetes (n=469).	Father.	30 (6%)	6 (3%)	24 (8%)	37.1% of persons contacted had a family history (of some kind) of diabetes.*	
	Mother.	31 (7%)	5 (3%)	26 (9%)		
	Children.	4 (1%)	1 (1%)	3 (1%)		
	Other blood relatives.	128 (27%)	35 (19%)	93 (32%)		
Those ever told they have diabetes/high blood sugar level (n=469).	Yes.	25 (5%)	7 (4%)	18 (6%)		8.0%**
	No.	444 (95%)	172 (96%)	272 (94%)		92.0%**
Of those ever told they have diabetes, person who told them (n=25).	Doctor.	23 (92%)	6 (86%)	17 (94%)		
	Nurse.	1 (4%)	—	1 (6%)		
	Other.	1 (4%)	1 (14%)	—		
Of those ever told they have diabetes, those who are now diabetic (n=25).	Yes.	8 (32%)	3 (43%)	5 (28%)		
	No.	15 (60%)	3 (43%)	12 (67%)		
	Do not know.	2 (8%)	1 (14%)	1 (6%)		
Of those feeling they are now diabetic, those with treatment prescribed (n=10).	Yes.	8 (80%)	3 (75%)	5 (17%)		80.9%***
	No.	2 (20%)	1 (25%)	1 (83%)		19.1%***
Of those with treatment prescribed, kind of treatment (n=8).	Insulin shots.	3 (37%)	1 (33%)	2 (40%)	Insulin only.	7.8%***
	Pills.	6 (75%)	3 (100%)	3 (60%)	Pills only.	19.5%***
	Diet.	8 (100%)	3 (100%)	5 (100%)	Diet only.	18.6%***
	Other.	2 (25%)	—	2 (40%)	Pills and diet.	20.7%***
					Insulin and diet.	13.5%***
Of those feeling they are now diabetic, frequency of testing urine (n=9).	Daily.	2 (22%)	1 (25%)	1 (20%)		29.0%*
	1 time/week.	3 (33%)	1 (25%)	2 (40%)		4.0%*
	Less than 1 time/week.	1 (11%)	1 (25%)	—	2 times/ month.	21.0%*
	Never.	3 (33%)	1 (25%)	2 (40%)		46.0%*

* from a 1980 survey of adult Utahns.[17]
** from a 1973 national survey of individuals 17 years of age and older.[18]
*** from a 1976 national survey of diabetics 20 to 60 years of age.[9]

62% of all the respondents–69% of the male respondents and 58% of the female respondents–keep at their exercise for longer than one-half hour at a time. Approximately 50% of all the respondents usually exercise vigorously enough each time to cause sweating. Survey respondents participate in physical recreation or hobbies an average of 3 times per week. Table 9 presents the exercise data collected.

Stress

One of four persons in the sample reports being worried or nervous a good deal of the time. Only 5% of the Coloradans surveyed were frequently or consistently unable to do their usual work during the past year because of their stress.

TABLE 9 — *Exercise Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations*		
		Aggregate	Male	Female		Male	Female
Amount of hard physical work required on job/daily household tasks.	Great deal.	103 (22%)	51 (28%)	52 (18%)		24.0%	10.4%
	Some.	173 (37%)	57 (32%)	116 (40%)		25.8%	18.0%
	Hardly any.	123 (26%)	40 (22%)	83 (29%)		20.4%	23.0%
	None.	70 (15%)	31 (17%)	39 (13%)		29.7%	48.5%
Frequency of exercise or participation in an active sport.	Everyday.	93 (20%)	36 (20%)	57 (20%)	Often.	31.5%	17.2%
	3 - 6 times/week.	118 (25%)	49 (27%)	69 (24%)	Sometimes.	25.4%	24.1%
	1 - 2 times/week.	88 (19%)	36 (20%)	52 (18%)	Rarely.	15.1%	16.6%
	1 - 3 times/month.	41 (9%)	14 (8%)	27 (9%)	Never.	28.0%	42.1%
	Less than once/mo.	129 (27%)	44 (24%)	85 (30%)			
When exercising, length of time kept at it.	1 hour or more.	183 (39%)	85 (47%)	98 (34%)			
	½ - 1 hour.	109 (23%)	39 (22%)	70 (24%)			
	15 - 30 minutes.	68 (14%)	18 (10%)	50 (17%)			
	Less than 15 min.	109 (23%)	37 (21%)	72 (25%)			
Frequency of exercise vigorous enough to cause sweating.	Usually/often.	203 (43%)	88 (49%)	115 (40%)			
	Sometimes.	112 (24%)	42 (23%)	70 (24%)			
	Rarely.	49 (10%)	14 (8%)	35 (12%)			
	Never.	104 (22%)	35 (20%)	69 (24%)			
Frequency of participation in physical recreation or hobbies.	Everyday.	30 (6%)	7 (4%)	23 (8%)	Often.	45.0%	43.7%
	3 - 6 times/week.	87 (19%)	37 (21%)	50 (17%)	Sometimes.	27.4%	29.1%
	1 - 2 times/week.	149 (32%)	68 (38%)	81 (28%)	Rarely.	13.7%	13.0%
	1 - 3 times/month.	79 (17%)	31 (17%)	48 (17%)	Never.	13.9%	14.2%
	Less than once/mo.	124 (26%)	36 (20%)	88 (31%)			

n=469

* from a 1979 national survey of individuals 20 - 64 years of age. [20]

Ten percent frequently or always feel upset with others. In responding to questions concerning how respondents deal with stress, the following results from nonmutually exclusive choice categories were observed: almost 60% of the survey respondents seek to deal with their stress by getting angry, while almost 30% deal with it through alcohol or medications. In contrast, 55% exercise, almost 60% meditate or relax, and approximately 80% talk over their problems with a support person to help relieve their stress. Table 10 presents the stress-related data collected.

Nutrition

Over 60% of the population surveyed routinely salt their food before tasting it. The frequency of eating salty snacks is less than weekly for about half those surveyed, but over one-third of the respondents consume sweets over three times weekly. Approximately 70% of the survey respondents eat red meat at least three times a week, and almost a quarter consume it daily. The percentage of male respondents that eat red meat is higher than that of female respondents: 28% of the males versus 18% of the females eat red meat daily. Over half the individuals surveyed snack between meals every day to several times a week. Approximately half the respondents routinely eat breakfast 5 to 7 days a week, but the *daily* consumption of breakfast is lower in the Colorado sample than across the nation. Thirty-nine percent of Colorado males surveyed and 47% of Colorado females surveyed eat breakfast daily, as compared with 53% for males and 56% for females nationwide. Table 11 presents the nutrition data collected.

TABLE 10 — *Stress Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations (Aggregate)*
		Aggregate	Male	Female	
Frequency of feeling worried or nervous.	All of the time.	39 (8%)	14 (8%)	25 (9%)	
	Often.	91 (19%)	33 (18%)	58 (20%)	
	Sometimes.	174 (37%)	65 (36%)	109 (38%)	
	Seldom.	141 (30%)	53 (30%)	88 (30%)	
	Never.	23 (5%)	13 (7%)	10 (3%)	
	Do not know.	1 (<1%)	1 (1%)	—	
Inability to do usual work in last year due to worry or nervousness.	All of the time.	6 (1%)	2 (1%)	4 (1%)	
	Often.	17 (4%)	7 (4%)	17 (6%)	
	Sometimes.	27 (6%)	—	20 (7%)	
	Seldom.	67 (14%)	25 (14%)	42 (14%)	
	Never.	352 (75%)	145 (81%)	207 (71%)	
Frequency of feeling upset, uptight, or irritable with others.	All of the time.	6 (1%)	3 (2%)	3 (1%)	
	Often.	43 (9%)	16 (9%)	27 (9%)	
	Sometimes.	187 (40%)	60 (34%)	127 (44%)	
	Seldom.	204 (43%)	87 (49%)	117 (40%)	
	Never.	29 (6%)	13 (7%)	16 (6%)	
Ways attempted to relieve nervousness, stress, or irritability.	Drink alcohol.	86 (18%)	45 (25%)	41 (14%)	17.5%
	Take medication.	51 (11%)	13 (7%)	38 (13%)	
	Exercise.	257 (55%)	98 (55%)	159 (55%)	31.9%
	Meditate/relax.	277 (59%)	84 (47%)	193 (57%)	16.7%
	Get angry.	278 (59%)	95 (53%)	183 (63%)	
	Do nothing.	216 (46%)	95 (53%)	121 (42%)	
	Sleep.	160 (34%)	64 (36%)	96 (33%)	
	Talk over problem with family/friend.	378 (81%)	129 (72%)	249 (86%)	
	Other.	182 (39%)	69 (39%)	113 (39%)	
Occurrence of greatly upsetting event during past year.	Yes.	191 (41%)	60 (34%)	131 (45%)	
	No.	278 (59%)	119 (66%)	159 (55%)	

n=469

* from a 1980 survey of adult New Yorkers.[21]

Alcohol

Eighty-two percent of the male respondents and 72% of the female respondents report consumption of alcohol. For females, this is higher than the national rate of 67%.[20] Fewer Colorado males surveyed but more Colorado females surveyed consume alcohol on a daily basis than do men and women nationwide. Twelve percent of the Colorado males surveyed and 9% of the Colorado females surveyed who drink alcohol do so every day, compared with 20% for males and 5% for females nationally.[20] Of all those surveyed who drink, the frequency of drinking averages 3 days per week. Males average 2.48 drinks a day when they drink, in contrast to 2.07 drinks a day for females. In the month preceding the survey, males had more than five drinks on one occasion, an average of 1.95 times, while females consumed this many drinks only an average of 0.52 times. Almost one in three respondents who drink report having driven a car when they had had "a good bit to drink." Table 12 presents the data collected about drinking behavior.

TABLE 11 — *Nutrition Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations		
		Aggregate	Male	Female		Male	Female
Frequency of eating red meat.	Everyday.	102 (22%)	50 (28%)	52 (18%)			
	3 - 6 times/week.	232 (49%)	91 (51%)	141 (49%)			
	1 - 2 times/week.	113 (24%)	34 (19%)	79 (27%)			
	Less than weekly.	21 (4%)	4 (2%)	17 (6%)			
Food salted before it is tasted.	Yes.	291 (62%)	114 (64%)	177 (61%)			
	No.	117 (38%)	64 (36%)	113 (39%)	38.8% add salt at mealtime.*		
	Do not know.	1 (4%)	1 (1%)	—			
Frequency of eating salty snacks.	Everyday.	29 (6%)	16 (9%)	42 (14%)			
	3 - 6 times/week.	72 (15%)	32 (18%)	59 (20%)			
	1 - 2 times/week.	125 (27%)	58 (32%)	92 (32%)			
	Less than weekly.	243 (51%)	73 (41%)	97 (33%)			
Frequency of eating sweets.	Everyday.	67 (14%)	25 (14%)	42 (14%)			
	3 - 6 times/week.	106 (23%)	47 (26%)	59 (20%)			
	1 - 2 times/week.	150 (32%)	58 (32%)	92 (32%)			
	Less than weekly.	146 (31%)	49 (28%)	97 (33%)			
Frequency of eating snacks between meals.	Between most meals.	44 (9%)	17 (9%)	27 (9%)			
	Almost once everyday.	126 (27%)	44 (25%)	82 (28%)		27.0%**	34.0%**
	Several times/week.	119 (25%)	46 (26%)	73 (25%)			
	Less than once/week.	107 (23%)	46 (26%)	61 (21%)	Rarely/occ.	73.0%**	65.0%**
	Never.	73 (16%)	26 (15%)	47 (16%)			
Frequency of eating breakfast.	Everyday.	206 (44%)	70 (39%)	136 (47%)		53.2%***	55.9%***
	5 - 6 times/week.	30 (6%)	18 (10%)	12 (4%)			
	3 - 4 times/week.	52 (11%)	20 (11%)	32 (11%)			
	1 - 2 times/week.	112 (24%)	49 (27%)	63 (22%)	Sometimes.	20.6%***	19.8%***
	Never.	69 (15%)	22 (12%)	47 (16%)		26.1%***	24.3%***

n=469

* from a 1980 survey of adult Utahns.[17]

** from a 1974 survey of adults in Alameda County, California.[14]

*** from a 1979 national survey of individuals 20 - 64 years of age. [20]

General Health

Dental Health: Over half the survey respondents have had a routine dental checkup within the past 6 months to a year, although a quarter of the population has gone more than 2 years without a checkup.

Automobile Safety: Less than a quarter of those surveyed consistently wear seat belts when driving or riding in a motor vehicle. Over half never wear seat belts. Over 40% of the children associated with the sample surveyed are restrained in seat belts when riding in a motor vehicle.

Occupational Health: Seventeen percent of the individuals surveyed have lost time from work and/or received Workmen's Compensation because of a job-related injury. One in five respondents has worked at a job which he/she perceived to be dangerous to one's health. Of these, over half were exposed to the hazard a year or more.

TABLE 12 — *Alcohol Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations	
		Aggregate	Male	Female	Male	Female
Those who ever drink alcoholic beverages (n=469).	Yes.	354 (75%)	146 (82%)	208 (72%)	81.4%*	67.2%*
	No.	115 (25%)	33 (18%)	82 (28%)	18.6%*	32.8%*
Of those who drink, frequency of drinking (n=354).	Everyday.	33 (9%)	18 (12%)	15 (9%)	2-6 times/wk. 19.7%*	4.8%*
	3 - 6 days/week.	63 (18%)	41 (28%)	22 (14%)	Once/week. 27.3%*	16.0%*
	1 - 2 days/week.	97 (27%)	42 (29%)	55 (35%)	Less than once/week. 13.8%*	11.0%*
	1 - 3 days/month.	88 (25%)	27 (18%)	61 (39%)	14.0%*	19.3%*
	Less than once/mo.	73 (21%)	18 (12%)	55 (35%)	5.8%*	15.0%*
Of those who drink, number of drinks/day they have on days they drink (n=354).	Average number of drinks.	2.3	2.48	2.07	1-2 drinks. 40.2%*	46.1%*
					3-4 drinks. 23.7%*	16.6%*
					5 or more drinks. 16.1%*	3.7%*
Of those who drink, number of times in past month they had 5 or more drinks on one occasion (n=354).	Average number of times.	1.1	1.95	0.52		
Of those who drink, number of times in past year they drove a car after "a good bit to drink" (n=353).	None.	250 (71%)	88 (60%)	162 (78%)		
	Once.	36 (10%)	18 (12%)	18 (9%)		
	2 - 3 times.	44 (12%)	23 (16%)	21 (10%)		
	4 - 5 times.	9 (3%)	7 (5%)	2 (1%)		
	6 - 9 times.	5 (1%)	4 (3%)	1 (<1%)		
	10 - more times.	9 (3%)	6 (4%)	3 (1%)		
Of those who drink, those told by a physician that drinking is injuring their health (n=354).	Yes.	10 (3%)	6 (4%)	4 (2%)	2.3%***	
	No.	344 (97%)	140 (96%)	204 (98%)	97.7%***	

* from a 1979 national survey of individuals 20 - 64 years of age. [20]
** from a 1977 national survey of Air Force personnel.[22]

Chronic Disease: Bronchitis is the most frequently reported chronic disease, afflicting 21% of the population surveyed. Asthma, at 7%, was the second most commonly reported disease. Stroke was the least frequently reported chronic disease, affecting only 1% of the population surveyed.

Self-Evaluation: Almost 50% of the respondents assessed their health as "good," while another 40% assessed it as "Excellent."

Table 13 presents the general health data collected.

Discussion and Recommendations

By conducting the Colorado Health Risk Prevalence Survey, the CDH has met the goals established at the outset of the project. The data collected should not be interpreted and/or put to use in program planning and related activities, however, without cognizance of their limitations.

TABLE 13 — *General Health Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations		
		Aggregate	Male	Female		Male	Female
Dental Health: Length of time since last dental checkup (n=469).	Never.	13 (3%)	4 (2%)	9 (3%)		2.1%*	2.6%*
	Within last 6 mos.	182 (39%)	60 (34%)	122 (42%)			
	6 months - 1 year.	79 (17%)	30 (17%)	49 (17%)	Less than 1yr.	36.4%*	31.5%*
	1 - 2 years.	82 (17%)	35 (20%)	47 (16%)	2-4 years.	16.9%*	14.2%*
	More than 2 years.	113 (24%)	50 (28%)	63 (22%)	More than 5 years.	14.7%*	11.7%*
Auto Safety: Frequency of wearing safety belts when driving or riding in a motor vehicle (n=469).	Always/almost always.	102 (22%)	40 (22%)	62 (21%)		19.8%*	19.5%*
	More than half the time.	29 (6%)	14 (8%)	15 (5%)	Sometimes.	13.6%*	15.3%*
	Less than half the time.	68 (14%)	24 (13%)	44 (15%)	Seldom.	18.1%*	17.6%*
	Never/almost never.	270 (58%)	101 (56%)	169 (58%)		48.5%*	47.5%*
When riding with children in a motor vehicle, frequency of their wearing safety belts (n=368).	Always/almost always.	159 (43%)	51 (37%)	108 (51%)	Less than 90% of children five years of age and under ride with restraints.**		
	More than half the time.	17 (5%)	7 (5%)	10 (5%)			
	Less than half the time.	32 (9%)	14 (10%)	18 (8%)			
	Never/almost never.	140 (38%)	58 (42%)	82 (38%)			
	Do not know.	20 (5%)	8 (6%)	12 (6%)			
Occupational Health: Those who ever lost time from work or received Workman's Compensation due to job-related injury (n=469).	No.	387 (83%)	128 (72%)	259 (89%)			
	Yes, lost time.	29 (6%)	19 (11%)	10 (3%)			
	Yes, received Workman's Compensation.	4 (1%)	3 (2%)	1 (<1%)			
	Yes, lost time and received Workman's Compensation.	49 (10%)	29 (16%)	20 (7%)			
Those who have worked at a job they felt was dangerous to their health (n=469).	Yes.	92 (20%)	64 (36%)	28 (10%)			
	No.	375 (80%)	114 (64%)	261 (90%)			
	Do not know.	2 (<1%)	1 (1%)	1 (<1%)			
Of those who have worked at a job they felt was dangerous to their health, source of danger.							
Of those who have worked at a job they felt was dangerous to their health, length of exposure to source of danger (n=99).	Less than 1 week.	6 (7%)	6 (9%)	—			
	More than 1 week but less than 1 month.	7 (8%)	5 (8%)	2 (8%)			
	More than 1 month, but less than 1 yr.	37 (30%)	16 (25%)	10 (38%)			
	1 yr. or more.	49 (55%)	37 (58%)	14 (54%)			

TABLE 13 (continued) — *General Health Data*

Variable	Response Categories	Prevalence in Colorado Sample			Prevalence in Other Populations	
		Aggregate	Male	Female	Male	Female
Chronic Disease (n=469):						
Heart attack.	Yes.	14 (3%)	10 (6%)	4 (1%)		
Stroke.	Yes.	7 (1%)	1 (1%)	6 (2%)		
Emphysema.	Yes.	10 (2%)	3 (2%)	7 (2%)		
Asthma.	Yes.	34 (7%)	13 (7%)	21 (7%)		
Bronchitis.	Yes.	97 (21%)	29 (16%)	68 (23%)		
Cirrhosis of the liver.	Yes.	2 (<1%)	—	2 (1%)		
Cancer.	Yes.	18 (4%)	2 (1%)	16 (6%)		
Of those reporting cancer, organ from which cancer originated (n=18).	Breast.	4 (22%)				
	Genitourinary.	6 (33%)				
	Skin.	5 (28%)				
	Bladder only.	1 (6%)				
	Bladder and lip.	2 (11%)				
Self-Evaluation of Health Status: Way in which respondents judge their own health (n=469).	Excellent.	192 (41%)	79 (44%)	113 (39%)	35.6%*	30.8%*
	Good.	223 (48%)	83 (46%)	140 (48%)	47.9%*	51.3%*
	Fair.	43 (9%)	13 (7%)	30 (10%)	12.7%*	14.1%*
	Poor.	10 (2%)	14 (2%)	6 (2%)	2.9%*	3.2%*
	Do not know.	1 (<1%)	—	1 (<1%)		

* from a 1979 national survey of individuals 20 - 64 years of age.[20]
** from a Department of Transportation report.[23]

Methodology and Process

With respect to the methodology employed, there are two concerns of which users of these data should be aware. First, the sample size determination of a minimum of 425 interviews was more than adequate to yield results within required precision levels for binomial parameters. However, the survey instrument utilized questions that collected various multinomial responses. Although the investigators are satisfied with the survey results, it would be advisable to use a multinomial correction factor (MCF) to increase the sample size in future applications of this survey.[24] In this case, an MCF of 1.53[24] would have increased the minimum sample size to 588. This would provide for the increased reliability of multinomial factors included in the survey. It should be stressed that the original sample size calculation is considered sound by the investigators and that the MCF is merely an enhancement of this calculation, recommended for use only when resources allow. Second, a disproportionate distribution of male versus female respondents was obtained using this methodology not only in this application but also in two subsequent applications involving subsets of the original target population in Colorado. This uneven distribution can be explained, at least in part, by the larger number of single female adults who had telephones. The result is a female bias in all households with only one adult. Representatives of Mountain Bell are familiar with the phenomenon of low male response rates in Colorado and attribute it to the above as well as to the tendency of men to refuse telephone interviews at a higher rate than women. To eliminate this problem, it is suggested that the sample be stratified with respect to sex before interviewing begins. This would assure a proper balance. In any event, this uneven sex distribution should be recognized when these data are used, particularly in comparing the health risks and/or conditions included in the survey by sex.

An examination of the survey process also raises a concern that requires discussion. While the refusal rate observed was approximately equal to refusal rates observed in other random digit dialing telephone health surveys, the overall completion rate of all possible contacts was relatively low (60.99% as compared with an established norm of 75%). This low

completion rate is directly attributable to the high number of "no contacts" after 8 callbacks (over 22% of all possible contacts). While Colorado may be significantly different from other areas with regard to the frequency of no one being at home, this rate is still very high. The callback instructions specified in the training manual and the contract with the interviewing firm required that the 8 callbacks be made at different times during the day and on different days. When the call records were examined, the 8 callbacks were indeed made but were often spaced as close together as 4 attempts at 15-minute intervals over 2 days. The investigators believe that callback attempt instructions in the future should delineate a procedure to ensure that the callback process is conducted in such a way as to cover a more diverse range of times over more days.

Recommendations

Data obtained from this survey will provide important information about the specific behaviors, attitudes, and conditions relating to a number of widely recognized health risk factors. However, to be useful, this information must be developed into more than a mere list of descriptive statistics. It must be carefully developed with consideration to the level of expertise of the target audiences, i.e., key policy makers, including:

- Legislators
- Local health departments
- Existing health planning agencies
- Health care providers
- Institutions of higher education
- Business and industry
- Other agencies and as appropriate.

In disseminating this information it will also be important to distinguish between those health risks identified that are amenable to change and those that may be static and unchangeable over time.

The CDH plans to embark on a systematic review of the data collected and to use the information, in light of the inherent limitations, as a needs assessment tool to influence the planning of future efforts to alleviate specific population health risks. In addition, the methodology developed to conduct this survey will be used to assess the prevalence of health risks in various subpopulations in Colorado.

Because of the lack of ongoing surveillance activities in the area of health risks, this survey will be the sole source of a wide spectrum of statewide health risk prevalence information. For this reason, it should be fully recognized that the information is based on a snapshot in time and relates only to the sample interviewed in the spring of 1981. While large populations generally change their characteristics relatively slowly over time, the future use of these data should reflect their age.

It is recommended that this survey again be conducted when enough evidence mounts to suggest that the prevalence rates of health risks in the population may have changed significantly. While specific changes in health risks may not be attributable to any single event or program, the analysis of trends in health risk prevalence fluctuations will be important to future health policy formulation.

In conclusion, the cost-efficient mode of telephone interviewing via the random digit dialing methodology has provided data that are adequate for further manipulation. The examination of these data can help decisionmakers to better identify areas of need in designing specific health-related intervention programs. Building on the experiences of statisticians and researchers who attempt to assess the prevalence of health risks, this research represents what the authors believe to be an effective assessment tool. What lies ahead is the responsible use of this research as but one of the many sources of information needed to improve the health status, and thus the quality of life, for the citizens of Colorado.

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The Use of Health Education-Risk Reduction Prevalence Survey Data in Georgia

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I'm from Georgia and as you have just heard, Georgia helped with the field test of the Centers for Disease Control's (CDC) version of the random digit dialing risk prevalence survey. I want to give you some of the history of health efforts in Georgia as background to our participation in that field test.

Under the leadership of James W. Alley, M.D., the Director of the Division of Public Health for the last 10 years, Georgia has been working towards conceptualizing a health program which recognizes current disease patterns. Beginning in 1973 Georgia started a study called "Cripplers and Killers," which identified the 10 major diseases that affect Georgians. Based on these data, Georgia developed a new epidemiologic model that tended to look at chronic diseases rather than the infectious diseases or parasitic infestations of past generations. At the onset, it was recognized that the epidemiologic model currently in place for infectious diseases (one identifiable disease-causing agent) is an unsuitable model for current disease patterns. There appear to be no single etiologic agents identified as the specific causes of heart disease, stroke, cancer, motor vehicular accidents, and suicide. Rather, these conditions reflect disease patterns influenced by the postindustrial society and current Georgian lifestyles. By contrast, the predominant society of yesterday nurtured in the infectious diseases, maintained high fertility rates, suffered high infant mortality rates, and had a high percentage of the population in the middle to younger age groups. With increased industrialization and technological advancements, the population patterns have shifted toward a larger population in the older age groups, and diseases have emerged that reflect a disproportionate influence of lifestyle, including smoking, obesity, and sedentary activities. Yet with this new disease picture, relatively few resources were being directed toward these health problems.

In 1981, the Division of Public Health, with assistance from Al Dever of Health Systems Analysts Inc., conducted an additional study entitled "Passages." This study has formed the central theme of Georgia's new health outlook. "Passages" recognizes that further analysis of mortality data is necessary to determine the disease patterns present in all life stages from birth to death. Diseases and health conditions make up patterns characteristic of most persons of a particular age cohort. "Passages" recognizes that each age cohort must be analyzed from a number of different perspectives that extend beyond mortality data. These perspectives include the physical, psychological, and sociological assessments, all of which, in combination, help to form the complex factors influencing the health status of particular age groups. Further, it is evident that the significance of the multiple factors influencing one life stage remain influential throughout the later life stages.

In Georgia, "Passages" is divided into nine different life stages: infancy, from birth to 1 year; childhood, from 1 to 4; later childhood, from 5 to 12; adolescence, from 13 to 19; early adulthood, from 20 to 29; young adulthood, from 30 to 44; middle adulthood, from 45 to 59; late adulthood, from 60 to 74; and older adulthood, from 75 forward. After identifying the diseases prevalent in each life stage, the "Passages" approach focuses on the preventive, health promotional, remedial, and rehabilitative activities most likely to impact on the morbidity or mortality of that life stage. These include the establishment of realistic health goals and the identification of program approaches necessary to achieve these goals. This approach also identifies the negative factors for each life stage that foster the disease conditions and the positive ones that, when promoted, will enhance health. The concept encourages the specific public health activities with the greatest potential for positive yield; this further directs the increasingly scarce health dollar toward specific disease targets.

To plan effectively for health program activities, including health promotion programs, the Division of Public Health has outlined specific objectives such as those defined in "Promoting Health-Preventing Disease, Objectives for the Nation for 1990." Georgia has planned its own objectives with specific attention to the priorities of "Passages" and to the availability of fiscal and other resources. Inevitably, there will be decisions made to balance the greatest good for the greatest number of people against other humanitarian concerns.

As a result of Georgia's "Passages" study, all sections of the division have incorporated the concept in programmatic development. With this as a cue, the Georgia Health Education-Risk Reduction (HE-RR) staff reviewed the objectives for Georgia and their associated programs. We then began to knock on the doors of the program directors, offering assistance with their "Passages" responsibilities. In some cases, objectives were set for specific diseases without the baseline data for the lifestyle activities associated with the diseases. At this point, the prevalence data gathered by the HE-RR program were offered for additional guidance in their planning efforts. Although not in the current version of the "Objectives for Georgia" (but in future publications), risk factor prevalence data will be used to assist programs to develop reasonable, measurable, and attainable objectives. The data will be used to select objective indicators and help decide upon strategies for program implementation.

The Department of Education can also use these data. Georgia has competency-based education (CBE). In part, CBE requires all graduates from Georgia's high schools to achieve specific status objectives. The prevalence data will be useful in revising the State-level health education curricula and in selecting the areas for content revision at the local level. As indicated above, the Georgia HE-RR program is to act in partnership with other programs that may have a need for the data. Because of the aim of becoming an important part of other programs, Georgia agreed to be a test State for the collection of risk factor prevalence data, using the instrument and phone methodology developed by the CDC HE-RR staff. The survey was completed this week, and the results have not been examined. The impact of these new data bits is still uncertain. However, there are a number of individuals and agencies awaiting the information. Future plans are to collect additional risk factor information within specific target populations associated with public health programs.

Both the needs of the public health community and the needs of other agencies (i.e., education and voluntary) concerned with health status will dictate the types of data to be collected similar to risk factors. There will be continued efforts to collect prevalence information using different instruments on the school-age populations. Currently, both of Georgia's intervention projects have collected baseline school-age data in specific regions. Depending upon the future funding opportunities, there are plans to expand the prevalence data collection to include all segments of the "Passages" life stages, including childhood and older adulthood.

Prevalence data can enhance the ability of these people who are interested in prevention to affect the direction of health programs. Several ways in which this enhancement can be viewed are summarized in the following statements:

1. "I've got it!" Prevalence data in combination with health education inventory information can make health educators reliable and useful resource persons for their own agencies and for other allied organizations, i.e., schools and industries.

2. "Let me help!" The prevalence data can form the core of a marketing effort for both the notion of prevention and the usefulness of the professionally prepared health educator.

3. "Trust me!" Prevalence data provide prevention programs with a level of credibility by indicating that the health education staff understand the health parameters of their populations.

In summary, Georgia will be able to use the prevalence data by beginning to incorporate the data and their implications into the design and delivery of public health services. This incorporation can occur in two planning levels: 1) at the policy development level, within the State-level health agency, and 2) at the strategic planning level, within the service delivery programs.

At both levels, the data can assist program directors in making the decisions necessary to meet their stated program objectives for 1985. With "Passages" as a guide and prevention as an emphasis, the existence of risk factor prevalence data make this an exciting time for health education in Georgia. This information will be used in a public health context, not in isolation from the social environment, so that Georgia is beginning to explore the epidemiology of health as well as the epidemiology of disease.

Teenage Alcohol and Smoking Prevalence Data

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I am the Director of the Research and Evaluation Unit for the Division of Preventive Medicine in the Massachusetts Department of Public Health. I am going to report today on some of the prevalence data from the smoking and alcohol intervention projects in Massachusetts funded by the Health Education-Risk Reduction (HE-RR) Grant.

The evaluation questionnaires were designed to assess knowledge and attitudes regarding drinking and smoking before and after participation in an alcohol and smoking curriculum that included teacher training, peer leadership, and life skills training. The target group was approximately 6,000 students in grades 5-12 in several different school systems and communities in eastern Massachusetts. The communities were a small town of 18,000 population in an agricultural area; three affluent suburban communities; a blue- and white-collar suburban area including four school systems; and an inner-city community of Asian and Chinese students in the Boston School System.

I would like to acknowledge many of the health educators who are here and who participated in these projects. They did a magnificent job of collecting the data and handling the projects: Debbie MacNeill, Margie Crooks, Dawn Sibor, Julia Chu, and Pam Jong.

I will report only prevalence data based on the pretests administered prior to the health education curriculum. The posttest results have not yet been analyzed.

The data I will give represent 6,000 questionnaires from students in grades 5-12 during the 1980-81 school year. For the question, "Have you ever smoked a cigarette, even one puff," the percentages of smokers by grades who answered yes are as follows: 5th graders, 28%; 6th graders, 38%; 7th graders, 51%; 8th graders, 68%; 9th graders, 74%; 10th graders, 77%; 11th graders, 82%; and 12th graders, 84%. The data indicate a big jump at grades 6, 7, and 8 in the percentages of students who try smoking. When analyzed by sex of the student, the data indicate that boys try smoking earlier than girls. By 6th grade, 44% of the boys have tried smoking versus 32% of the girls. This difference disappears at grade 7 and, in fact, by grade 8, 72% of the girls had tried smoking versus 64% of the boys. This finding indicates that many girls begin experimenting with smoking in the 2 years between 6th and 8th grades.

To begin to understand current prevalence of actual smoking versus experimental smoking, we also asked the question, "Did you smoke any cigarette in the past month?" The percentages of yes answers were as follows: 5th graders, 3%; 6th graders, 6%; 7th graders, 14%; 8th graders, 31%; 9th graders, 32%; 10th graders, 43%; 11th graders, 32%; and 12th graders, 34%.

From responses to the question, "Have you smoked between 5 and 15 packs of cigarettes in the past week," we learned that in the 5th-8th grades, the percentage is low; by grade 9, it is 5%; by grade 10, it is 10%; by grade 11, it is 11%; and by grade 12, 13%. For boys, the rate was between 6% and 7% in grades 10, 11, and 12, but for girls, the rate was between 16% and 17% in these grades.

From these data, it appears that ages 12, 13, and 14 are the ages at which many people try smoking; that often, a fairly stable smoking habit is established by grade 10 or age 16 years; and that many girls not only catch up by then but have a well-established habit.

We asked one question, for our own interest, regarding the type of cigarettes smoked. We found that about twice as many girls (13%) as boys (6%) smoked lower-tar-and-nicotine cigarettes.

We also wanted to determine the relationship of smoking to academic success as measured by grades. We found a significant relationship between reported smoking in the past month and lower academic grades. Nine percent of those who got A's and B's reported smoking; 18% of those with B's smoked; 28% of those with C's smoked; and 45% of those whose grades were in the C-F range smoked. Thus, those who reported the lowest grades reported the highest prevalence of smoking in the past month.

Another analysis of these data showed that girls generally got slightly better grades and, yet, as a group, were smoking more than boys. To understand this finding, we analyzed the data further and determined that girls in the lower academic range (C's-F's) are smoking at a very high percentage rate (76% in one school and 63% in another). These girls raised the general female rate and represent a prime target for intervention.

Now I am going to turn to the alcohol data. We asked, "Did you drink an alcoholic beverage last month?" Of 5th graders, 10% reported yes; of 6th graders, 20%; of 7th graders, 23%; of 8th graders, 43%; of 9th graders, 61%; of 10th graders, 75%; of 11th graders, 83%; and of 12th graders, 89%. Now in Massachusetts the legal drinking age is age 20, so practically all these students are drinking illegally. But by senior year in high school, 90% of them were succeeding in doing so, at least during the month previous to the survey. That is a rather astounding degree of prevalence. The big increases in the number who drank during the previous month occurred among the 8th, 9th, and 10th graders, slightly later phasing than for smoking.

Although these are not longitudinal data (since we are not tracking the same people through the various grades), I think these are similar cohorts of people measured at one period of time. We can guess that this is a pretty good picture of the progressive pattern of drinking as people get older. According to the responses to the question about drinking in the previous month, boys have a higher rate of drinking than girls in every grade up through 8th grade; in high school the rates are comparable.

When you turn to established drinking habits, like really "robust" drinking patterns (i.e., 11 or more drinks per week), we found the percentages quite low (1%) in grades 5-8. At 9th grade, 6%; at 10th grade, 8%; at 11th and 12th grades, to 21%. When data were analyzed for boys and girls separately, the boys' drinking is far in excess of the girls; the percentage of boys reporting 11 or more drinks per week is 3 or 4 times the percentage for girls. At 11th and 12th grades, 31% and 43% of the boys actually reported drinking 11 drinks or more in a week. By contrast, only about 9% or 11% of the girls did. So in terms of amount of alcohol, the pattern here is very similar to what we find in adults, with males doing much more of the heavy drinking.

We also looked at the drinking patterns according to reported academic grades received; of the A and B students, 52% reported drinking in the previous month, for those reporting B's, 64%; B's and C's, 66%; of those reporting C's-F's, 79%. The pattern we saw between drinking and academic grades received was similar to that seen for smoking.

Data from the question, "Who was your companion when you had your first drink—was it your parents, someone else in your immediate family, another relative, or was it a friend?" produced interesting results among 7th-12th graders. Of people whose first drink was with a *family* member, 62% reported drinking in the last month; this compares with 84% for those whose first drink was with a friend. The type of initial companion appears to make a difference in those who reported drinking in the past month. In grades 5-8, there was an even stronger trend: only 33% of those whose first drink was with family had drunk in the last month compared with 63% for those whose first drink was with a friend. It looks like an interesting aspect of people's introduction to alcohol use.

I will conclude with comments about the usefulness of prevalence information of this kind. First, we can use these data to target intervention programs to the students at highest risk. This is particularly helpful when we have a very limited budget. Second, we may be able to learn a good deal about targeting interventions from the students' answers. One of our questions found an association that will probably not surprise anyone: people whose friends drink or smoke are more likely to drink or smoke themselves. But there is also another, much smaller, group of people who do not smoke or drink, but whose friends do. This would be an interesting group of students to study more closely because they are people who are resisting temptation, peer pressure, advertising, etc., and who are not taking up smoking or drinking despite the fact that their friends are. Maybe we will learn something from these people who are "living success stories." We intend to study these students this year. We have revised our evaluation instrument to get more data on friends in order to locate those who resist peer pressure to see if we can find out something more about their characteristics, which may give us clues for successful intervention.

Third and last, the ages that people begin smoking and drinking indicate something which makes a lot of intuitive sense to everyone, that is, that adolescents in junior high think of smoking and drinking as adult behaviors and therefore as indicators of adult status. Thus, drinking and smoking are initiation rites into adult maturity. It might be wise for us as adults to take a look at the modeling effect of our own drinking and smoking behavior. Are we creating for children a smoking and drinking adult status model which they will follow to establish their own maturity?

Risk Factor Prevalence Survey–MOHAKCA

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I actually volunteered to speak about a community prevalence survey. Why did I agree to present a short talk on a subject that I consider pretty dry and, at times, very dull? I thought that those risk reduction projects considering their own prevalence survey production might be interested in hearing firsthand a description of the script, the directors and performers, the constumes, and, finally, the performance of one particular prevalence survey in a large metropolitan area.

I have compared the process of a prevalence survey to a stage production in hopes of making the unknown more real. I would suggest that a prevalence survey is a comedy, a tragedy, and a little of the theater of the absurd.

Our script was developed mainly through the State Project Coordinator in Missouri, who assembled prevalence survey questionnaires from several States and developed the draft of our questionnaire. This script went through two series of reviews and changes by the public health educators and risk reduction grantees. The result was a closed-question instrument that took about 10 minutes to complete.

We used the random digit dialing survey method, a phrase like the Billings method of birth control, the Leboyer birth method, or the Anderson/Green Precede planning method–that most of us now recognize without knowing the principles of the method. Basically, a randomized sample is ensured through screening telephone prefixes for residents, selecting the four digits to be added to the prefixes from a table of random numbers, limiting the contact attempts of interviewees, and selecting the actual interviewee from the household through a precoded table.

The beauty of this survey method is that it elicits a sample that can be generalized to your population. However, it takes incredible clerical skills to screen out business, nonworking, governmental, and other nonhousehold telephone prefixes. In addition, a log must be developed to keep track of telephone numbers called and contact attempts.

In our survey we wanted to have 400 respondents in Missouri and 400 in Kansas. We generated a table of 10,000 random numbers. We ended up calling 2,781 telephone numbers at least once to successfully interview 386 Missouri and 359 Kansas respondents. By "successful," I mean that their completed interviews could be used for survey results; some completed interviews could not be used because of clerical or interviewer error. We made a total of 4,054 calls. I hope this gives you an indication of the sheer bookkeeping nightmare that is necessary for this task. However, not all community surveys need to be so extensive.

Jim Parrott, the Missouri State Project Coordinator, and I were the directors of the production, the people who ran the show. We were not prepared for the immense amount of recordkeeping involved. Even had we known the recordkeeping requirements, we could not have been totally prepared.

The Centers for Disease Control agreed to provide training for participants, mainly the directors and assistants. An excellent workshop on the mechanics of the random digit dialing method, questionnaire design, supervisory needs, interviewer skills, and recording forms was held in Kansas City by Walter Gunn and Naomi Golding. Although the workshop was superb, I believe we were not sufficiently organized to receive its full benefit.

The directors designed the survey with the help of local health educators. Because of our few resources and our need to target risk reduction programs better, we chose to survey Jackson County (Kansas City) in Missouri and Johnson and

Wyandotte counties in Kansas. These areas are mainly urban with some suburbs; there is no rural population. Not surprisingly, these areas are served by the 3 health departments (out of 10 in the area) that are beginning either an inhouse risk reduction program, a health promotion program for business and industry, or both.

These three health departments, along with two others in the Metropolitan Official Health Agencies of the Kansas City Area (MOHAKCA coalition), the local Health Services Administration, the three risk reduction projects (besides the MOHAKCA one), two voluntary organizations, and a few individual volunteers, contributed a total of 371 person-hours, which, when converted into dollars, amounted to approximately $3,000 of service. This did not include my work or that of the Missouri Division of Health. In addition to the volunteered help, our staff had six paid interviewers, who worked about 200 hours on the project.

MOHAKCA risk reduction grant funds paid for the interviewers and the installation and use of six telephones. All other resources—the questionnaire forms, the rooms, desks, chairs, and the like—were donated. The whole production cost the MOHAKCA project about $1,000. The performance—the actual telephone interviewing—was intense. Two directors and usually six interviewers telephoned from 9 to 9, Monday through Friday, for 2 weeks. The Directors distributed telephone numbers and coded completed interviews. The interviewers performed spectacularly: they kept track of whom they called and the results of their contacts, and they filled out the completed questionnaires. Some interviewers lost their voices; a few lost a bit of their sanity. It is incredibly difficult to call strangers, introduce the survey, be rejected, try another number, ask all the questions on the 10-minute instrument, and complete the paperwork for any continual length of time. It is tedious, dull, boring, and exhausting work.

For all this work as well as the organizational and research skills and the patience needed, what were our results? We have a survey of the prevalence of negative health behaviors and risks in a major metropolitan area (Table 1).

TABLE 1 – *Prevalence of Negative Health Behaviors and Risks, Jackson County (Kansas City), Missouri, and Johnson and Wyandotte Counties, Kansas*

Risk	Prevalence	
	% Kansas	% Missouri
Smoking	39.9	33.4
Hypertension	31.3	25.3
Diabetes	8.8	9.2
Alcohol use	65.3	65.2
Alcohol misuse (defined as five or more drinks at one sitting in last month)	22.5	18.1
Stress (perceived as great during daily life)	22.3	17.5
Nonexercise	32.4	26.6
Obesity (20% or more overweight)	14.1	12.1

*The difference in percentages between the two States is related to the sampling. Kansas data include suburban respondents, white, middle class and the Missouri sample is mainly inner-city.

Why do a prevalence survey? The overt reason for gathering baseline data is to assess the impact of the health promotion effort. Gathering community baseline data has an additional purpose: it can demonstrate the special needs of your target population. For example, if there are significant differences in the prevalence of smoking between your community and your target population, the data may help you demonstrate the need for your program. Also, comparing your communitywide data with national data may help your community name these health problems that most require action.

Unfortunately, our ability to assess the communitywide impact of programs is going to be limited because money will not be available for continuing communitywide prevalence surveys.

There is a less-obvious reason to conduct a prevalence survey and that is to organize your community, the health agencies in your area, and the coalitions that serve the public to focus on a task. A prevalence survey can be the point at which agencies become aware of their potential to cooperatively appraise health problems and plan for the health of their community.

THE HUMAN POPULATION LABORATORY
ALAMEDA COUNTY, CALIFORNIA

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It is a pleasure to be here to talk with you about the Human Population Laboratory (HPL); some of its past activities; what we are doing currently; and what we expect to do in the future. The reason for doing this is not to toot my own personal horn. In fact, I can take little credit for this work as it represents an effort which has been going on for over 20 years, and I've only been involved for a little over 5 months. I am really in the wonderful position of having interesting information to talk about, without having had to do all the work involved in gathering it. The reason for talking about the HPL to this group is that many of our findings have had a significant input on the development of preventive activities as represented in the many health education and risk reduction programs seen at this conference. What I'd like to do is to tell you about where some of this information has come from, some of the findings, some of the problems of interpretation, and some of the challenges which come from these data.

What is HPL? It is a 22-year-old research effort, originally funded by the National Institutes of Health in 1969. Our current funding is almost entirely through the Centers for Disease Control. It is a research effort which has carried out 13 field studies, produced 74 publications, and 6 PH. D. dissertations.

Much of this work has been an attempt to deal with three themes: the first involves the realization that some time ago we moved from the era of infectious diseases into an era of chronic diseases. We have moved from situations where we believed there were simple etiological paths which connected host, agent, and environment. As it turns out, even with infectious disease, it was really not that simple. Chronic disease etiology appears to be very different from the etiology of most infectious diseases. Chronic diseases are highly complex, involving many factors related in complex ways. We cannot isolate with any assurance a single factor which would invariably lead to a particular event. For example, in the cardiovascular area an attempt was made to pool the results of eight or nine large scale prospective studies on cardiovascular disease in the United States. One of the results of this effort was the finding that in over 10 years of followup 90% of the people who had two or more cardiovascular risk factors did not have any cardiovascular disease. Of those who did have some kind of cardiovascular event, 60% had no more than one identified risk factor. So now, even in the cardiovascular area where we think we know much about the etiology of the disease, we are still unable to predict with any great certainty who will experience cardiovascular disease and who will not. Thus, our knowledge even in this area is still rather primitive.

The second theme that occurs in our work reflects the viewpoint that health is something more than the absence of disease; health also includes social, physical, and mental well-being. The HPL has done a good deal of work attempting to quantify and clarify this broader notion of health.

The third theme has to do with the importance of a community base for the study of health issues. To study health and its determinants by looking at people who present themselves as sick in medical settings, or to study special convenient populations, is valuable, but it is important also to study the range of health experience in a community in order to learn the overall epidemiologic patterns related to health.

Thus, part of the HPL's efforts over the last 22 years have been to look at a large number of normal people, in an average community representative of many other communities in the United States, and to study a full range of

health outcomes and independent variables. The full range of health outcomes includes physical health (defined in terms of morbidity and mortality as well as in terms of disability and impairment), mental health, and social health. Much of this work has included the use of a longitudinal, prospective design. As you know, it's absolutely imperative to look at these types of relationships in a prospective way to get around difficult issues involved in interpreting cross-sectional data and to learn the causal nature and patterns of associations. For example, from cross-sectional data we don't know if health outcomes reflect the impact of what people do on their health or instead reflect the impact of their health status on what they do, or both. Prospective, longitudinal studies are the best approach to resolving such issues.

There have been many methodological problems involved in doing this, and much effort at the HPL over the years has been oriented towards developing solutions to the methodological problems raised in consideration of these three themes.

The biggest problem, I suppose, has to do with how you are actually going to study the health of a large group of people. One could take a large group and give them all some sort of medical interview and physical examinations.

Indeed, there are longitudinal studies such as those in the Framingham series which have done so. But this is very costly, and obviously we are going to miss people who don't have any great love for medical studies. There are also a number of issues which relate to the highly selected nature of such groups and resultant bias. Thus, very early, the HPL decided to develop survey interview techniques that could be used in studying health. This is "old hat" now, but back in 1959 and 1960 the use of survey information for studying someone's health was a novel approach with many unknowns. It was considered something that really did not tell you very much about health. Thus, the early HPL work was heavily involved in trying to establish the reliability and validity of survey measures of health. The success of this is shown by the fact that the health data collected in 1965 have been shown to be strongly related to people's health 10 years later. The next problem had to do with who would be studied. Many of the studies which examine the relationship between what people do and their health have suffered from the fact that they tend to deal with convenience samples, that is, the groups studied are easy to study for one reason or another. The HPL investigators tried to arrive at a method which would give a picture that was true for an entire community. In this case, the community was Alameda County, and a concerted attempt was made to get a random, representative sample of adults in Alameda County.

A final problem which plagues survey interviewers is how to get people to cooperate. When you give people a long survey, what you would really like to do is sit there with them while they fill them out, but that's enormously expensive (prohibitively, in many cases). You could send it to them, but the return rates are going to be very low. What the HPL investigators developed, after a number of field studies, was a staged process. First, a particular household is identified as part of the sample. Then the household is enumerated by an interviewer who collects descriptive information such as who lives in the household, family composition, and the names of the people who live there. Then questionnaires are left for all the eligible respondents in that household who are asked to return them by mail. They are sent a post card thanking them for their cooperation. Those who don't respond are sent a letter, and then a telegram. If they have still not responded, they are called. Then, if there is still no response, an interviewer is sent out to find out why they were having some problem completing the questionnaire. Believe it or not, this is much cheaper than going out and interviewing everybody. It also gives you a much better sample in terms of its being representative of the population you are trying to study. The development of this strategy at HPL has led to a survey approach which has a considerable amount of reliability and validity and results in a group of respondents who are much like the community at large.

Now I would like to tell you more of the specifics about one of our main data collection and analysis efforts. In 1965 a group of about 8,000 people were selected in a multi-stage probability sample of Alameda County, created to mirror as closely as possible the characteristics of the county population. The study was restricted to adult residents of the county who were not institutionalized. This means they were slightly healthier than the overall population. Eligible respondents were over age 20 years or over 16 years old if married in 1965. Today, 16

years later, the median age of this population is roughly 55. The 8,083 people were given questionnaires in 1965, and roughly 7,000 returned theirs. This group of 6,928 constitutes the population that has been followed for the last 16 years. One of the questions you may want to ask immediately is, whether the people who responded to the questionnaire were different from those who did not. It turns out they are not very different. The strategy for selecting the people was very successful in getting a group of people who were representative of the county. However, this is only true because of the elaborate 4-stage followup process which was used in going after those people who did not initially return questionnaires. If we had stopped with the people who mailed in interviews after the first stage, these would have been highly unrepresentative data. By following up with multiple attempts at data collection, we can say we ended up with data that truly represented the community.

Now we turn to what were they asked in the questionnaire. The data we have reflect first some general answers about their health, appetite, sleeping habits, energy level, fatigue levels if they have only 3 or 4 hours of sleep, how often they feel worn out. In addition there were questions about preventive health service—when was the last time they went to see a doctor for a general checkup even though they weren't feeling sick, when was the last visit to the dentist, do they have a particular doctor, do they have health coverage of any sort, during the last 12 months how many times did they see a doctor; how many sick days were they in bed, were they hospitalized, were they institutionalized for any reason.

Then there are responses to a list of 16 or 17 conditions, high blood pressure, heart trouble, stroke, chronic bronchitis, asthma, arthritis or rheumatism, chronic nervous trouble, epilepsy, cancer, diabetes, tuberculosis, emotional disorders, drinking problems or alcoholism, stomach ulcer, duodenal ulcer, chronic lung trouble, gall bladder trouble, liver trouble, hernia or rupture. People indicated whether they had that condition during the last 12 months, if it bothered them very much, and when it started.

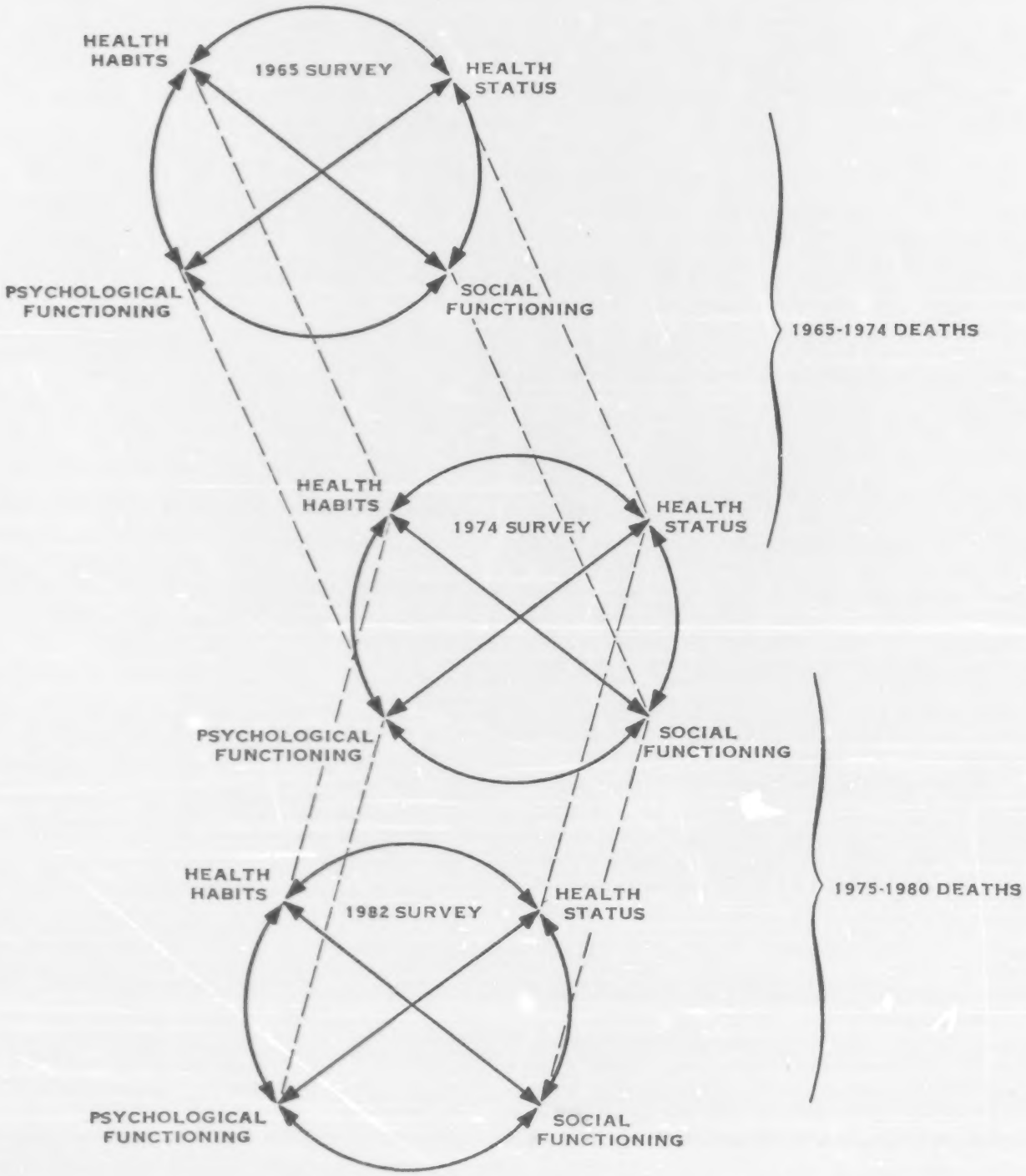
Then there are a series of questions about 11 physical ailments—such as frequent cramps in the legs, pain in the heart, pain in the heart or chest, trouble breathing or shortness of breath, paralysis of any kind, stiffness or any swelling or aching of any joint or muscle, swollen ankles, stomach pain, headaches, back pain, and constant coughing or frequent heavy chest colds. I think you can begin to see that we started with many standard epidemiologic questions. We also asked questions of impairment having to do with the ability to perform activities of daily living, self-care activities, changes in having to cut down in work, etc.; we also asked questions that have to do with whether or not people are employed, self-employed, the kind of work that they do, occupations, type of job, how good they are at what they do, how many different times they have changed jobs, how much hard physical labor they do in their job, and if they worry about keeping the job.

Then we asked questions about health habits. This area has probably received the greatest attention among health education and risk reduction people. It's very important information and, I think, in conjunction with some other information, gives a lot of clues for prevention. The questions about habits involved how often they eat breakfast and snack, alcohol consumption, usual amount of sleep, smoking, and physical activity in leisure time.

In later contacts with the respondents we asked about the presence of certain kinds of stressors. Questions concerning the occurrence of change in residence, bereavement, neighborhood deterioration, divorce, etc., were asked.

There were also questions about people's feelings—general psychological indicators that give you some ideas about depression and morale. Of course, standard demographic information was also collected. Other questions addressed people's social involvement—their marital status, how they felt about their marriage, and/or their children, whether they were involved with other friends and relatives, and how often they saw them. In addition they reported on more formal social activities such as participation in organizations and religious groups. Now I just want to point out something. These are all questions which people currently include in surveys, because it's now recognized that social connections and social support impact on health. But in 1965, this was not generally recognized and I think that it's a real tribute to the thinking of Lester Breslow and his early

FIGURE 1 – *Design of Human Population Laboratory Study*



colleagues at HPL that this kind of information was included in 1965. Today as I examine the HPL data I consider myself very fortunate that 16 years later I have these types of data.

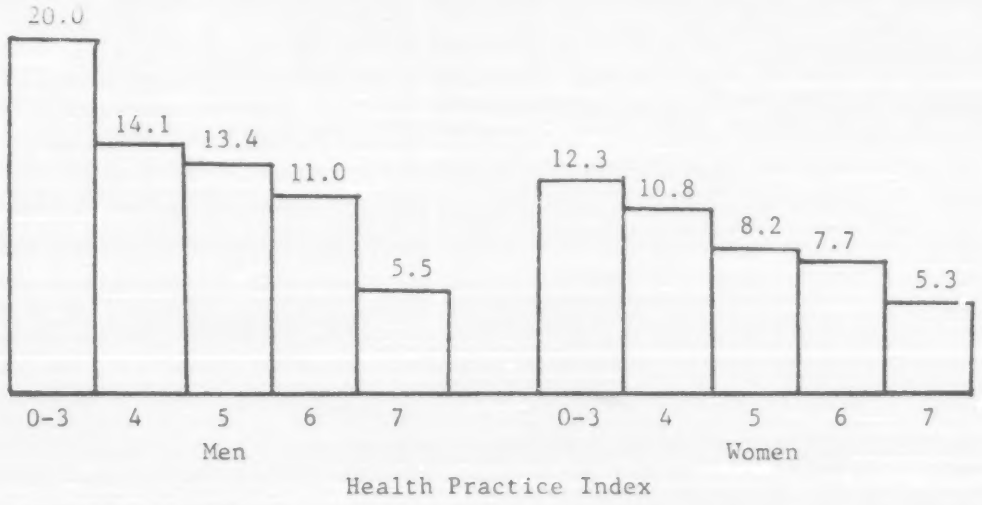
Finally, the last question asked is probably the most important of all - "Would you please give the name of a relative or friend outside of the household with whom you keep in touch, in case we want to contact you in the future." In 1965 the HPL was already planning to follow these people at a later date and knew how difficult it would be to follow up without such a contact person. In fact it was difficult because as we later found out, 60% of this population moved in the period 1965-1974.

In 1974 in order to locate the survivors from the 1965 survey we first attempted to identify all those who had died in that 9½ year period. Even this was difficult. HPL staff developed a computer linkage system which allowed us to scan the California death registry for our 1965 respondents. This is a procedure which will become more and more common as we develop a national death index, but it is a very complicated business; people change their names, they appear as Robert in one place and Bob in another; or they change their names by marriage, or whatever, so it's difficult but possible to carry out. In 9-1/2 years we identified 717 deaths that had occurred in this population. We then put all our resources into tracing the other people, i.e., the people believed to be living. These absolutely heroic efforts involve calling employers, neighbors, current residents of previous residences, searching records out of state, etc. With these efforts, it was possible to account for 96% of this population 9 years later. There were only 252 out of 6,928 who were not found. For purposes of analysis these people were considered lost to followup.

In 1974, we were able to find almost all of the 1965 respondents who were still alive and to measure health habits, psychological functioning, health status, and social functioning for the second time. Half of these 1974 respondents will be interviewed again in 1982. Thus, this year we will have 17-year mortality figures.

Now, I will highlight a few of the findings from a variety of different domains that have come out of the HPL studies in order to indicate the broad spectrum of risk factors associated with the future health of this population. Probably the most often quoted result from this study is the relationship between number of health practices and mortality. The health practices index is composed of information reflecting smoking, height relative to weight, alcohol use, leisure time physical activities, sleeping patterns, and eating snacks and breakfast. Figure 2 shows both for

FIGURE 2 – *9-Year Mortality/100 for Alameda County Residents Aged 16-94*



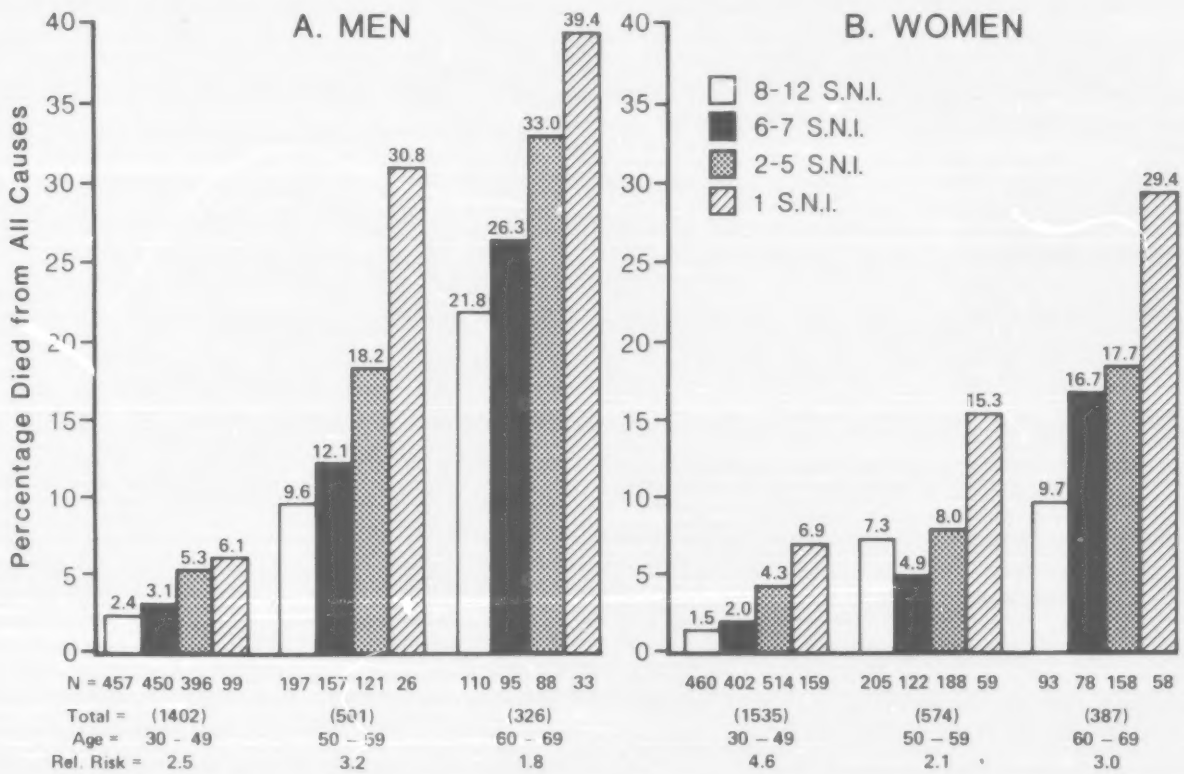
Source: Breslow L, Enstrom JE, 1980

men and women that there is the same pattern of mortality associations with the practice of more health habits with lower mortality rates.

People who practiced seven good health practices have the lowest mortality, while people who practiced zero to three good health practices show the highest. That is true in each age group and for both men and women. The overall relative risk associated with practicing zero-three versus seven health practices is approximately 3.6 for men and 2.3 for women. What that says is that if you do all these things, if you smoke, if you are over or under average weight, if you drink more than moderately, have little leisure time physical activities, and if you sleep more or less than 7-8 hours, your risk of dying during the next 9 years is around 2.3 times that of somebody who does not do any of those things. So I think this is the strong evidence that has buttressed a lot of prevention activities, i.e., the notion that there is a relationship between discretionary behavior and health—the things people do—studied in a large community, and future mortality. It turns out that this relationship also exists between future morbidity. People's health status in 1974 was related to how many of these discretionary health practices they had practiced.

A second major domain of analysis that has been carried out at the HPL involves looking at the relationship between measures of social functioning and future health. Berkman and Syme created what they called a social network index. This index is a measure of the extent to which you are involved with friends and relatives, are married vs. single, and belong to formal or informal groups. As you can see in Figure 3 people who were more involved in their social environment show a lower mortality rate between 1965 and 1974. Furthermore, this association between social participation and mortality remains when 1965 health status or health practices are taken into account.

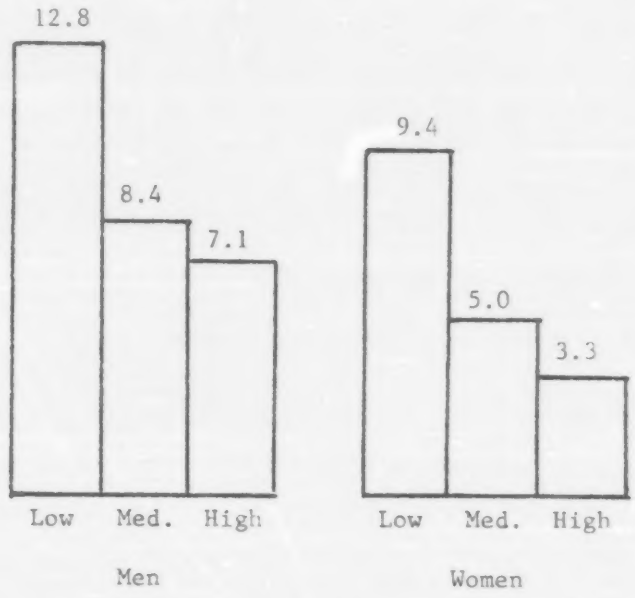
FIGURE 3 – *Mortality Rates from all Causes by Social Network Index Age, Sex-Specific Rates, 1965-74*



Psychological variables such as life satisfaction are also importantly associated with mortality. An index was created from responses to a variety of items in the HPL questionnaire which asked how satisfied respondents were with their life in general, with specific areas of life--work, marriage, family, etc. As you can see in Figure 4 those who reported high life satisfaction had low moratality rates, and those who reported low life satisfaction had high rates.

So what have we found? We have found that the things that poeple do, their social interaction with other people, and how they feel about their life are all related to mortality and, in some cases, morbidity.

FIGURE 4 – *9-Year Mortality Rates/100 for Alameda County Residents Aged 30-69*

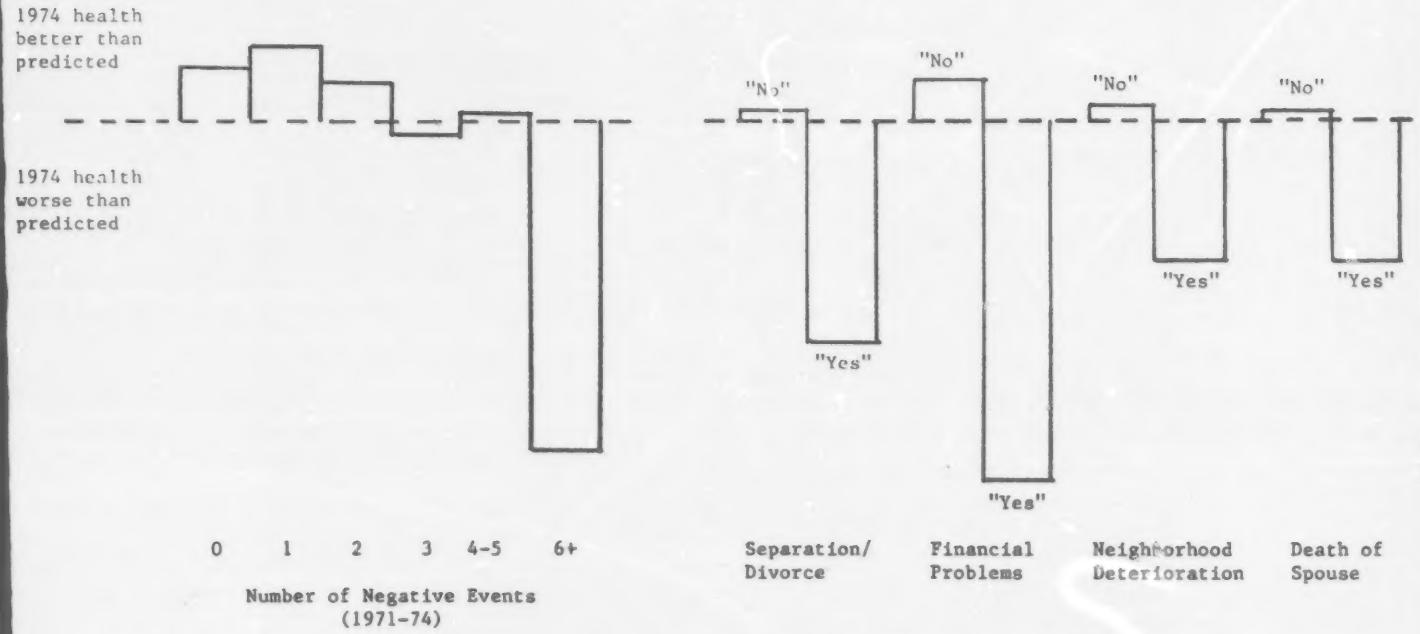


Source: Berkman L, Syme SL, 1978

We have also examined the relationship between the occurrence of various life stresses and respondents' health. Here, instead of looking at mortality, we examined the 1974 health status of 1965 respondents. On the basis of their age, sex, and physical health status in 1965, we predicted their physical health status in 1974. We then examined the deviations between this predicted health status and actual health status for those who reported the occurrence of various negative life events. As you can see in Figure 5, the number of negative life events which they reported happening in the 3-year period prior to 1974 was related to 1974 health status. Those who reported six or more negative events have substantially poorer physical health status than was predicted. Figure 5 also shows deviations from predicted health status for specific negative events: separation or divorce, financial problems, neighborhood deterioration, and death of a spouse.

Thus we see from these analyses that a variety of aspects of people's lives are related to their survival. Identification of these risk factors can help substantially, we believe, in the planning of interventions and also in the analyses of why some interventions fail and others succeed.

FIGURE 5 — *Deviations from 1974 Health Predicted by 1965 Health Status, Age, and Sex*



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For example, successful intervention programs often involve action at all of these levels. If you look at some of the large-scale clinical trials, evaluating, for example, the effectiveness of a new anti-hypertension drug you can generally see that the intervention involves more than just a new drug. Participants in such studies find themselves involved in a new social support system. They become part of a new reference group that involves all the other people who are also being treated. They're sometimes even driven to the clinic to be checked. They get lots of encouragement, social support, and they probably feel better about themselves as a result. I think this has got to become a part of any successful intervention; what's happening in successful intervention probably involves interaction between all of these different factors. In fact, I think it's highly likely that these efforts act synergistically. Successful antismoking attempts are another good example. They often involve creating peer support groups and involve more than just risks. They involve restructuring the nature of people's social and psychological support systems and how they feel about themselves.

The work in the future at HPL will involve following up on many of the findings and ideas which I've been mentioning, and also continuing data collection. Starting in January, we will be out in the field interviewing a 50% sample of the people who responded in 1974 and who are still alive. One of the major purposes of this third wave of data collection is to be able to look in more detail at things that have to do with trajectories of health—both upward and downward. What makes some people more resistant or hardier?

Increased host resistance which allows some to remain healthy over time more likely than not involves features of the individual's social, psychological, and behavioral functioning. We will be searching for the thread which links them all.

We will also be examining 1965-1974 changes in levels of physical activity, smoking, and health practices between in general. We will be able to get estimates about the impact of those changes on future health. In order to understand these changes we are also we will look to factors in their social and psychological environment in 1965 which made it more likely that they will change. Thus we are starting to look in a more complex way at the relationships between a variety of factors and health in these data. I am convinced that the information from this will be relevant to many kinds of prevention and intervention efforts.

In addition to these general health outcomes, we will also be looking at factors related to specific conditions and causes of death, and issues associated with aging, disability, and improved health functioning in the aged. Our overall purpose in this phase of HPL analysis is to obtain more information on the factors that are associated with less or more risk in individuals, in order to have better documentation on areas where prevention is most called for. Through this analysis we hope to help focus prevention and intervention efforts where the impact is likely to be greatest.

IV. LOCAL INTERVENTION PROJECTS

Fetal Alcohol Prevention Program—Vermont

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The Vermont Department of Health's fetal alcohol syndrome program was developed this year to address alcohol as a risk factor (we previously had no program effort in this area) and to address the emergence of the fetal alcohol syndrome as a recognized, preventable cause of mental retardation. While most of you are probably aware that this syndrome has been labeled the third and, more recently, the leading cause of birth defects associated with mental retardation, I would like to point out that for 92% of all birth defects the cause is unknown. Still, fetal alcohol syndrome is known to be environmentally produced and therefore amenable to primary prevention efforts.

The fetal alcohol prevention effort was incorporated into the Health Education-Risk Reduction Program as part of a conscious effort to use existing resources and service delivery systems that will, we hope, be ongoing. We feel that both the general public and the health professional community will need educational input on a long-term basis before knowledge increases and practices change regarding this problem.

An essential first step was to determine the extent of need for this type of prevention program. In some States the alcohol and drug abuse division, a governor's commission, or a categorically funded program has initiated an extensive fetal alcohol syndrome public education campaign. In Vermont, there was no such program.

Our second step was to measure the level of knowledge both among prenatal care providers and members of the public at large. We began by surveying statewide and, in person, a small percentage of our prenatal care providers, including the most sophisticated obstetric practice in our largest city. We found that, in general, obstetricians were not inquiring about alcohol use during pregnancy unless they felt there was an obvious indicator that the woman was already abusing alcohol. Questions about alcohol intake are not listed on the preprinted American College of Obstetricians and Gynecologists (ACOG) form used by most obstetric practitioners.

Although a national survey by the Opinion Research Corporation in 1979[1] revealed that 66% of the total population and 80% of women of childbearing age have read or heard something about the effects of alcohol on the fetus, a more indepth survey by the University of Washington in Seattle showed many persons lacked specific knowledge about the quantity of alcohol required to produce these effects. The Vermont Department of Health's Statistics Division is currently carrying out a statewide telephone survey of 300 randomly chosen women of childbearing age. Only minimal costs, for computer time, will be associated with the survey. State-specific information from this survey and our upcoming risk prevalence survey will be most helpful in targeting our educational efforts and making professionals aware of the problem.

Lately, close coordination with our State Alcohol and Drug Abuse Division was another essential and early part of program planning. Preliminary meetings with that division's director, media information specialist, and community educator led to the coordination of efforts and the possibility of cost-sharing.

The Vermont fetal alcohol prevention program is targeted at three separate subgroups of the population: currently pregnant women, infants born to women who drink during pregnancy, and women of childbearing age who are not currently

pregnant. We have found two ways of using existing health department resources to reach the first target population, currently pregnant women. One is to have the staff for the Women, Infants, and Children (WIC) Program administer a standardized screening tool for alcohol use and to educate other health care professionals via referral. The other is to have Maternal, Infant and Child Health Clinics incorporate into their current activities a model alcohol screening, counseling, and referral program.

In our State, nearly 50% of all pregnant women are being served by the WIC Program. At the intake process, questions about diet, medications, alcohol, and smoking are routinely asked to determine eligibility for the program. The single question about alcohol use, which was being inconsistently asked and unevenly reported, was replaced by a series of four questions requiring specific, quantifiable answers. The questions are based on Cahalan's Volume-Variability Index,[2] and with simple multiplication and addition the number of drinks per month can be calculated.

Women identified as drinking above a certain level are then referred back to their prenatal care providers to have an alcohol history taken at a prenatal visit. A fetal alcohol coordinator has been named in each health department field office. This person makes personal visits to obstetricians to deliver professional information packets and describe screening activities of the WIC Program. Much of the information in the professional packet can be obtained, at no cost, from the National Clearinghouse for Alcohol Information. In addition, I have included two alternative screening tools for identification of alcohol use among obstetric patients, a list of local alcoholism treatment-referral sources that specialize in counseling women, and three sample pamphlets that can be ordered for use with patients.

Our objective is to gradually integrate strategies to prevent fetal alcohol syndrome into existing obstetrics/gynecology practices by demonstrating the effectiveness of our screening tool. I should add that we are beginning by piloting this program in three of our field offices and that we have provided extensive training to the field staff who will be doing the screening.

In Vermont, there is only one Maternal, Infant and Child Health Clinic in the entire State, so our efforts there will not have much of a numerical impact, except as "spillover" into the large obstetrics/gynecology practice with which is is associated. The model program I am attempting to have replicated is based on the work of Dr. Henry Rosett et al. at the Boston City Hospital.[3] These researchers administerd a 10-question drinking history to all prenatal clinic patients, provided individual counseling onsite, and rescreened and counseled on later visits, as necessary. Because the Maternal, Infant and Child Clinic has a nutritionist, social worker, and nurse-midwife, who see patients on their first prenatal visit for a total of 1½ hours, time and staff expertise are both available.

Our second target group consists of those infants born to women recipients of the WIC Program who are identified as drinking above a specified level during pregnancy. A 4-year followup program is currently being developed by a staff pediatrician affiliated with the Department of Health's Child Development Clinic. The objectives of this program are the early identification and treatment of the more subtle effects of alcohol on the fetus as well as the full-blown syndrome. The fetal alcohol coordinator will be trained to do standardized developmental assessments at periodic intervals. At age 4, children will require psychological testing for precursors to learning disabilities; it is anticipated that the health department psychologist can perform this function. Information from these assessments will be relayed to the child's pediatric care provider; the protocol for the followup program will be included in an information packet for this group of providers. Children requiring further evaluation and treatment services will be referred to the Child Development Clinic for care.

Our last and perhaps most important target population is women of childbearing age. Since childbearing age is traditionally defined as starting at age 15, our principal objective is to integrate curricula on fetal alcohol syndrome into junior and senior high schools. Fortunately, in our State the Alcohol and Drug Abuse Division offers frequent teacher-training workshops that are well attended. Several good curricula[4] on fetal alcohol syndrome, including films, already exist, and several more are in the final stages of development. It appears that the Alcohol and Drug Abuse Division, with only a little encouragement on our part, will purchase and use these materials.

We will also attempt to reach women in this age group via the mass media. The National Institute for Alcoholism and Alcohol Abuse has cooperated with our effort by producing a nationwide media campaign due for release in 1982. This campaign will focus on alcohol and youth, alcohol and women, and fetal alcohol syndrome. Public service announcements for radio and television, feature articles for newspapers, and press releases will be distributed to each State's primary alcohol agency. Other States have also developed public service announcements about the syndrome that can be purchased and used in the interim. I have seen the public service spots that were developed by the National Institute for Alcoholism and Alcohol Abuse after extensive marketing research and pretesting; they are innovative and technically well done. We also have one more information packet in the works for 1982. It will be distributed to groups that deal with women in the childbearing age group. Results from the randomized telephone survey will be used to help determine the contents of that packet. Since pamphlets or other printed material on pregnancy, childbearing, and related health issues directed at women who are not pregnant are scarce, we would like to be able to produce our own.

Built into this entire program are three methods of evaluation. One is the telephone survey of knowledge levels; this can easily be replicated later. Second is a personal interview survey of all prenatal care providers. It is being carried out by the fetal alcohol syndrome coordinators. It measures current physician practices with regard to alcohol screening and counseling. This can also be readministered after the program has been in operation for several years. Finally, we can measure changes in the numbers of WIC recipients who reported significant alcohol use before and after use of the more sensitive screening techniques.

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Safe Woodburning Project

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The Safe Woodburning Project is a supplemental activity of the Maine Risk Reduction Project, designed to reduce morbidity and mortality associated with the unsafe burning of wood as fuel. As the cost for other forms of energy continues to rise, more Maine citizens (over 50%) are relying upon wood as a primary or secondary source of heat. In a State with an 8-month heating season and one of the Nation's lowest per capita incomes, wood burning is not a fad; it is critical for survival. When fuel oil prices were 16¢ per gallon, only the poor burned wood, but when 60¢-70¢ a gallon became common, the middle class had to reach for alternatives. With the current price of oil greater than $1, even the more affluent urbanites and suburbanites have installed wood stoves. Along with this marked increase in the use of wood as fuel, however, have come dramatic increases in personal injuries, deaths, and property damage.

The Safe Woodburning Project is helping residents of Maine increase their understanding of the use of wood as a fuel; it is also assisting them in selecting, installing, operating, and maintaining woodburning equipment. This program, operated through a grant to the University of Maine Cooperative Extension Service, is guided by an advisory group, which includes representatives from the State Office of Energy Resources, the State Fire Marshall's Office, wood stove dealers, local fire departments, home and fire insurance agencies, chimney sweeps (really!), and the Division of Health Education in the State Bureau of Health. In addition to helping set direction for the project, this advisory group has been helpful in assisting project staff understand the nature and complexity of the problem in Maine.

Initial attempts by the project to obtain data on the magnitude and severity of the problems caused by unsafe woodburning were disappointing. A new uniform-fire-reporting system had only recently been instituted by the State Fire Marshall's Office, and few local departments were using it, so provisions were made to specifically identify fires caused by faulty wood-heating practices. As with many other new data collection efforts of this size, data processing and analysis were painfully slow. Mortality data available from the Fire Marshall's Office, however, revealed a growing problem. Anecdotal information gathered by fire department chiefs also revealed an increasing problem of considerable scope.

During the past summer, a major survey of 100 fire chiefs in Maine was conducted to determine 1) the number and specific cause of wood-heat-related fires; 2) the nature and scope of safe woodburning educational efforts; 3) the level of interest of local fire departments in further education in woodburning safety; and 4) the content and methods for such training. Since all information was gathered through personal interviews with project staff, another important aspect of the survey was developing rapport with many local fire fighters and promoting the Safe Woodburning Project as a resource available to them.

Among the major findings of the survey were the following:

- There was a 60% increase in wood-heat-related fires from 1979 to 1980.
- Poor burning practices and lack of chimney maintenance account for over 86% of these fires originating in chimneys.

- Although rural areas are currently experiencing the highest actual rate of wood-heat-related fires, the rate of increase in urban areas is much greater.

- Although most local fire departments promote safe woodburning to some extent, no association could be established between their informational and educational efforts and the actual incidence of wood-heat-related fires.

- Most fire departments identify the need to do more in the area of prevention and are willing to attend evening evening sessions to increase their skills.

- There is a great deal of ambivalence and a general lack of public support for statewide or local mandatory inspection programs.

Perhaps the major finding from the fire chiefs' survey is that woodburning safety is complex and multifaceted. Because of the degree of human involvement in woodburning, a "foolproof" system does not exist. It is human error—lack of foresight, judgment, experience, information, and often common sense—not the actual stove, that causes most fires. A periodic house-by-house inspection program, followed by individualized repair and modification and an educational program that addresses issues in woodburning "from the wood lot to the chimney top" might go a long way toward reducing fires. However, such steps are simply unrealistic for economic and political reasons.

The Safe Woodburning Project is developing a wide array of approaches for educating about woodburning safety. While local fire departments will always remain the central community entity identified with fire safety and prevention, believing that they, alone, can address the problem would be unfair. Fire fighters are anxious to receive more indepth, intensive training in woodburning safety. Regional workshops, competently staffed and conveniently scheduled to meet the needs of volunteers, are now being planned. Resource people have been identified from throughout the State, representing diverse areas of expertise, from chimney sweeps to mechanical engineers, from masons to insurance company representatives.

Project staff are also exploring the possibility of supplementing small-group training of volunteer firemen with a televised statewide program on public broadcasting, that would include a toll-free call-in capability. Special efforts are being made to focus training initially in the counties with the highest rates of woodburning-related fires.

One of the major advantages of the Safe Woodburning Project's being sponsored by the Cooperative Extension Service is the use of its existing service-delivery network. During the project's first year, a Safe Woodburning Workshop was held for all of the county agents. Plans call for this type of seminar to be offered on an annual basis. Individual counties have taken a number of initiatives in public education. One county has developed an extensive safe woodburning demonstration as part of a "Warm Home Energy Conservation Project." This active woodburning exhibit is part of a building that has been completely renovated to serve as a "self-guided-tour" museum. Thousands of people have taken the tour and learned more about proper woodburning techniques. This center also serves as a site for numerous community workshops on energy conservation and woodburning safety. Other counties have begun regular radio programs and newspaper columns on woodburning safety. Exhibits have been developed for use at county fairs and at other public gatherings. A number of county agents have held organizational meetings with fire department personnel, wood stove dealers, chimney sweeps, masons, social service providers, and educators to plan a coordinated strategy to educate about safe wood burning.

In another area of Cooperative Extension Service responsibility, work is under way to design a woodburning safety unit for the 4-H Program. Often children are the ones who are operating wood stoves. With the increasing number of single-parent households and ones where both parents work outside the home, children are often the first to arrive, late in the afternoon, to a rapidly cooling off house. Since little attention has been given to this situation, the 4-H Program has begun to address this issue with a number of efforts. This activity will not only prevent possible problems now but also expose a new generation to proper woodburning techniques and practices. Materials developed by the 4-H Program will also be available for in-school use.

Because so many people are burning wood in Maine, television is being used to increase knowledge and awareness of safe woodburning practices. Public service announcements, based upon prevention of the major causes of fires that were uncovered in the fire chiefs survey, are being developed. Special programs on commercial and public television have addressed issues about safe woodburning, often in conjunction with energy conservation and alternative energy systems. Guest appearances by local wood-heating experts on both television and radio have become much more common. The timing of these public media presentations is also a factor that is being taken into consideration. It does little good to have a public service announcement on the virtues of cleaning your chimney presented in May. By that time of year, most people want to forget about chimney cleaning for a few months.

Another major component of the Safe Woodburning Project is the continuing development of an extensive resource center. The materials and references contained at the center are aimed at both the general public and the professional and technical communities. Being located on a university campus has enabled the project to establish strong relationships with many key experts in wood-heating technology in the State. In addition to being able to serve the needs of the county agents and others seeking nontechnical information, the project has been able to work closely with some of the Nation's leading authorities in woodburning.

Unless some new source of cheaply available energy is developed soon (which seems unlikely), woodburning will be with us for a long time in Maine. The Safe Woodburning Project is playing an integral role in assuring that wood is used as safely as possible. Through our project's continuing relationships with county extension agents, local fire departments, stove dealers, health agencies, school systems, the media, and others, a variety of methods for public education on this issue are evolving and a system for monitoring progress is being developed.

V. EVALUATION

Evaluation of Health Education-Risk Reduction Programs

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Health education-risk reduction programs have as their general purpose an improvement of the participants' health status and perceived quality of life. While the quality of life concept is somewhat nebulous, most program evaluation efforts justifiably devote some resources toward measuring it. However, the primary focus of the evaluation should be on health status, since an inability to demonstrate change in health status is likely to result in a reduction or elimination of administrative and fiscal support for the program.

Given the short length of most State and locally sponsored health education-risk reduction programs, a measurable and meaningful change in health status is difficult to identify. Also, if the participating population is relatively healthy, a change in health status is improbable. Therefore, program evaluation tends to focus on changes in behaviors that occur as a result of the program and to use such changes to infer future health status. This is a sound approach to evaluating health education-risk reduction programs and probably is the approach that most of your program evaluation efforts have taken to date. Table 1 includes a listing of possible health education-risk reduction programs along with the health status indices and behaviors that feasibly could be included in the evaluation plan.

Measurement of the health status indices identified in Table 1 is a relatively straightforward procedure. When problems occur, they are usually caused by improperly calibrated instruments (skin-fold caliper) or improperly conducted procedures (laboratory tests for cholesterol, taking of blood pressure). If evaluation protocols are well formulated and adhered to, measurement problems in this area can be avoided. Most of the procedures listed to measure health status are relatively easy to do and are inexpensive. (High-density lipoprotein cholesterol is an exception.)

Measurement of individual risk behaviors is neither straightforward nor simple. To help ensure the evaluation of risk behaviors is valid and useful, three rules should be followed.

First, always examine the behavior from several perspectives. To simply ask the question "Do you smoke cigarettes;?" tells you very little. While the individual may still smoke, he/she may have changed the manner of smoking thus reducing the risk. Rather, you might ask, "How many cigarettes a day do you smoke? What is the tar and nicotine content of the cigarette that you smoke? Do you inhale? If so, how often and how deep? How much of the cigarette do you smoke? Do you smoke filter or nonfilter cigarettes?" Examining behaviors from more than one perspective results in increased opportunities to demonstrate that the program has been effective in reducing risk factors. Thus, individuals who smoke only a few cigarettes a day may be able to quit entirely, while heavy, long-term smokers may reduce their daily consumption, change brands, or smoke only a part of each cigarette. In both cases, the behavior has changed; thus it may be possible to demonstrate a reduction in the risk factor.

Secondly, be certain that the questions are properly constructed (both the question stems and the response options).

Proper construction includes: 1) being certain each question has a correct or best response; 2) assuring that the respondents are capable of comprehending the question (paying particular attention to the readability of the question); and 3 being certain that the format of the questionnaire (including the directions) is not confusing.

Thirdly, always attempt to have a standard against which your findings can be compared and interpreted. In the traditional sense, this implies comparing data from the treatment group with data from a control or comparison group. While few people would argue against the desirability of this approach, most persons conducting health education-risk reduction programs find they have neither the resources (fiscal or personnel) nor the extent of cooperation (school or agency officials) necessary to generate data from a control or comparison group. Therefore, data are often compared on a pre/post-program basis. This is a useful comparison (and in some cases a sufficient comparison for decisionmakers), but it is susceptible to severe criticism.

A feasible, albeit not perfect, procedure to ensure reasonable adherence to these rules is to use test items from existing Federal survey instruments or other commonly used noncopyrighted instruments. Federal survey instruments and their test items have been subjected to review at the program, department, and Office of Management and Budget levels. Often,

TABLE 1 – *Measurement of Health Status and Health Behavior Variables for Selected Health Education-Risk Reduction Programs*

Program	Health Status Indices	Behavior
Exercise/fitness	Cholesterol levels (high- and low-density lipoproteins) Percent body fat Resting pulse rate Pulse recovery rate	Frequency of exercise Intensity of exercise Duration of exercise Type of exercise
Drugs/alcohol	None feasible	Type of drug/alcohol used Frequency of use Consumption per occasion Pattern of use (including time factc)
Smoking cessation	Vital capacity (in select cases)	Number of cigarettes smoked/day Brand of cigarette smoked Pattern of smoking (including inhalation) Consumption of other tobacco products
Weight loss	Body weight Percent body fat	Daily caloric intake Daily nutritional intake (fats, protein, carbohydrates) Eating patterns (e.g., eating rapidly) Daily energy output
General nutrition	None feasible	Daily caloric intake Daily nutritional intake
Stress management	None feasible	Recognition of stress factors Actions taken to avoid stress factors Actions taken when stressful situations occur
High blood pressure control	Blood pressure readings	Compliance with medication regimen Adherence to dietary and exercise regimens

many of the persons involved in the review process are experts on content (e.g., nutrition) or measurement. The instruments have been used with a variety of populations, in some instances, for many years. Thus, it is reasonable to believe that the instruments are well constructed and usable. Another reason for using federally developed instruments is that they tend to include items that examine behaviors from many perspectives. In instances where the items selected from one instrument are not examining a particular behavior to your satisfaction, items from other federally developed instruments can be used to supplement them. But, perhaps, the most compelling practical reason for using existing instruments, or items from them, is that they provide you with a standard for comparison. Your results can be compared with those from the federally sponsored studies (many of which have used random sampling procedures). This will enable you to compare State or local program results (specifically prevalence of specified risk factors) with national risk factor prevalence data. There are limitations to this approach, but such comparisons often are favorably viewed by State and local decisionmakers.

A number of research and evaluation instruments have been developed and used by the Federal Government over the past two decades. Many contain items that are appropriate for evaluating health education-risk reduction programs. Also,

the survey results can be used as the standard for comparison for local program data. The studies listed below used instruments that can be used by evaluators.

- The National Survey of Health Practices and Consequences is a one-time study conducted by the National Center for Health Statistics. The data were collected in telephone interviews with about 3,000 persons ages 20-64 representing a national probability sample. A random digit dialing technique was used. Two waves of interviews (spring of 1979 and 1980) were conducted; the first wave included 3,025 interviews and the second 2,436. Results of the surveys have been published by the National Center for Health Statistics.[1] Copies can be purchased from the Superintendent of Documents.*

- The Lifestyles and Values of Youth Survey is sponsored by the National Institute on Drug Abuse. Data from this survey have been collected annually since 1975 by the University of Michigan's Institute for Social Research. The survey instrument is administered to high school seniors from approximately 123 to 130 public and private high schools, selected to provide an accurate cross-section of high school seniors. Survey reports, which are published by the National Institute on Drug Abuse,[2-4] can be purchased from the Superintendent of Documents. The item areas included in this instrument are marijuana/hashish use, inhalant use, cocaine use, hallucinogen use, heroin use, other opiate use, stimulant use, sedative use, tranquilizer use, alcohol use, cigarette use, attitudes and beliefs about drug use, and the social milieu of drug use.

- The National Patterns of Cigarette Smoking surveys are usually sponsored by the Office on Smoking and Health. Data from these surveys have been collected since 1967. The latest survey involved long-distance telephone interviews with 2,639 males and females from 12 through 18 years of age. A stratified probability sample (by age and sex) involving the 48 contiguous States was used. Results have been published by the National Institute of Education and the Office on Smoking and Health.[5,6] Copies of the reports can be purchased from the Superintendent of Documents.

- The National Health and Nutrition survey is a periodic survey obtaining data from physical examinations, clinical and laboratory tests, and related measurement procedures on a national probability sample. This survey provided data on persons 1-74 years of age for the period 1971-1980. Item areas in the instrument include blood pressure, dental conditions, nutritional status, nutritional behavior, and physical activity. Results of the surveys have been published by the National Center for Health Statistics[7] and can be purchased from the Superintendent of Documents.

- The Framingham Heart Disease Epidemiology Study was initiated in 1949. Data were collected from a panel of approximately 6,000 respondents, ages 30 to 50, for a 20-year period. Data were collected on a number of cardiovascular risk factors including body weight, cigarette smoking, blood pressure, serum cholesterol, and physical activity. The methods used to collect the data and the procedures used to create indices are thoroughly described. The 33 reports that have been published by the National Institutes of Health[8] can be purchased from the Superintendent of Documents.

In addition to examining health status and health practices, evaluation plans usually specify collection of data related to the constellation of factors believed to precede and sustain behavioral change. This often involves measurement of the relevant predisposing, enabling, and reinforcing factors described by Green and his associates.[9] However, to specify more clearly the important factors that should be examined, the Centers for Disease Control's Center for Health Promotion and Education (CHPE) and the Office of Health Promotion are working together to develop research/program evaluation handbooks for seven health areas. An independent contractor, Instructional Objectives Exchange (IOX), is conducting the work on this project under the direction of Dr. Walter Gunn (CHPE).

*U.S. Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

To identify the relevant behaviors and the constellation of antecedent and sustaining factors believed to affect the behaviors, panels composed of health education and content specialists were convened in Los Angeles in the spring of 1981. To facilitate the panelists' discussion on program outcomes, a categorization scheme was developed by IOX which classifies program outcomes, into five related, but distinguishable, categories: 1) health effects, 2) behaviors, 3) knowledge, 4) attitudes, and 5) skills. In general, behavior outcomes were considered the most profound because they reflect the actual post-program activities of persons (e.g., participant uses stress-management techniques as a result of program participation).

Knowledge, attitudes, and skills were viewed as contributing to the behavior outcomes. The knowledge category encompasses recollection of factual information (e.g., an individual can recall facts about basic neurophysiology). The attitude category deals with the participant's disposition to regard something in a particular manner (e.g., the individual views stress as something that can be handled without using pharmacologic agents). The skills category has three components: psychomotor skills, interpersonal skills, and higher order intellectual skills (e.g., an individual recognizes stress symptoms). While this categorization is different from that proposed by Green and his associates, the result is similar. Also, since many of the behaviors identified in Table 1 are similar to those identified by the panelists, they are not included in the following section.

The constellation of antecedent and sustaining factors identified by the panelists and pertaining to the five health promotion areas described in "Healthy People"[10] are listed in Table 2.

TABLE 2 – *Measurement of Antecedent and Sustaining Factors for Selected Health Education-Risk Reduction Programs**

A. Alcohol and Drug Abuse Consultant

Knowledge
1. Local information on alcohol and drug abuse
2. Consequences of alcohol and drug abuse
3. Danger signs and variables leading to excess

Skills
1. Alternatives for managing emotional needs
2. Dealing with external psychological pressures
3. Relating effectively to others
4. Techniques of responsible alcohol use

Attitudes
1. Morality of alcohol and drug use
2. Perceived effects of alcohol and drug use
3. Openness to alternatives
4. Respect for authority
5. Sense of efficacy about the use of alcohol and drugs
6. Intention to refrain from using alcohol and drugs

B. Exercise Programs

Knowledge
1. Effects of exercise
2. Fitness categories and options

See footnote at end of table.

TABLE 2 (continued) – *Measurement of Antecedent and Sustaining Factors for Selected Health Education-Risk Reduction Programs**

B. Exercise Programs (continued)

3. Barriers to exercise
4. Risk prevention

Skills
1. Fitness self-assessment
2. Goal selection
3. Program design and care of injuries
4. Program implementation
5. Avoidance

Attitudes
1. Perceived ability to exercise regularly
2. Intention to exercise regularly
3. Positive attitude toward exercise

C. Nutrition Knowledge

1. Food classification and composition
2. Health consequences of food and diet
3. Diet and life cycle
4. Diet management
5. Economics of food purchasing
6. Legal guidelines

Skills
1. Diet plan selection
2. Analysis of nutrition information
3. Analysis of food consumption patterns
4. Food preparation
5. Securing maximum nutritional value from food expenditures

Attitudes
1. Commitment to health and nutrition
2. Weight given to nutritional risks and benefits
3. Acceptance of different dietary patterns
4. Acceptance of food/diet variety
5. Natural skepticism regarding miracle diets

D. Smoking Cessation Programs

Knowledge
1. Benefits of not smoking
2. Situational control techniques
3. Factors influencing individuals to smoke

*See footnote at end of table.

TABLE 2 (continued) – *Measurement of Antecedent and Sustaining Factors for Selected Health Education-Risk Reduction Programs**

D. Smoking Cessation Programs (continued)

Skills
1. Use of situational control techniques
2. Monitoring one's smoking behavior
3. Assertiveness in relation to smoking

Attitudes
1. Belief in the benefits of not smoking
2. Appreciation of one's body
3. Perceived ability to refrain from smoking
4. Intention to refrain from smoking

E. Stress-Management Programs

Knowledge
1. The stress response
2. Resources for coping

Skills
1. Personal stress analysis
2 Using stress-management techniques
3. Life management
4. Recognition of stress symptoms

Attitudes
1. Positive outlook on life
2. Perceived capability to manage stress
3. Intention to manage stress

*These outcomes were identified by the various expert panels assembled to assist IOX develop the seven evaluation handbooks.

The attached listing of program evaluation references includes sources of instruments useful to the instrument development phase of evaluation. In addition, the Health Promotion Media Campaign Target Audience Survey, developed by the Office of Health Promotion, may be useful for some evaluation efforts. The instrument contains items on general health beliefs, media viewing patterns, health information sources, and a variety of health behaviors including nutrition, exercise, and smoking. Many of the questions were developed around the Health Belief[11] and Fishbein models.[12]

The instrument was administered in a panel of approximately 660 households in two cities before and after the campaign. Results, which can be used for comparison, can be obtained by contacting the Office of Health Promotion.†

†Office of Health Promotion, Reporter's Building, Room 613, 300 7th Street, SW, Washington, DC 20201.

Summary

Persons responsible for evaluating health education-risk reduction programs should consider evaluating their programs at three levels: 1) changes in health status indices; 2) changes in personal health behaviors, and 3) changes in the knowledge, skill, and attitude factors believed to affect the measured behaviors. Tables 1 and 2 identify those variables, by program type, which should be measured. Federally developed instruments, which include items pertaining to the variables listed on Tables 1 and 2, are also identified. While evaluation is seldom easy, the efficiency and value of efforts to evaluate programs can often be improved by using the suggestions contained in this paper.

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Maximizing the Use of Technical Assistance in Evaluation

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Like Marshall Kreuter, we believe that risk reduction is one of the biggest things to happen to health education in a long time. In fact, it may be the biggest thing to hit health education since the portable, 16-mm sound projector.

Fifteen million dollars plus change. . . . While it's not enough to pay for the bucket seats and other options on a new B-1 bomber, it's not exactly chopped liver either. It's the largest single funding source ever for health education. The money is being channeled into those previously moribund State and local health education departments.

But reviving health education departments is only a minor goal. A more important one is demonstrating the effectiveness of health education. For if it's not demonstrable now, and if, in the end, health education is found lacking or wanting for whatever reason, it will be many professional generations from now before we see another national health education effort of this scope.

Thus, a lot more hinges on the success of the risk reduction programs than first meets the eye. The public and many policy makers and health professionals are watching to see what happens to these projects. They are particularly interested in the degree to which local programs can show an impact on the prevalence of targeted risk factors. There is also a long-term expectation that projects can demonstrate a relationship between reductions in morbidity and mortality for chronic disease and other preventable health conditions.

If 5 years from now, the overall conclusion drawn from the current risk reduction projects is that they had no measurable effect, we, as a profession—regardless of how much we learn about our craft—will be in big trouble. All of us may have to go back to teaching high school biology.

It is not only the fear of failure that must prod us to do our best. The risk reduction grants are a golden opportunity to methodically and scientifically advance our knowledge in the field. The earmarked evaluation funds were not designed only to intimidate and frustrate local project people. They were provided specifically for the purpose of furthering the art and science of health education, by answering questions such as the following:

– Was the project successful?

- What specific elements contributed to project success or lack of success?
- Was the project implemented in such a way that success, as defined by project objectives, might be expected?

If we can't answer these questions, we cannot blame policy makers for not providing resources to evaluate health education projects. We may be left blaming ourselves if evaluation efforts are insufficient.

It is not only evaluation design and data collection methods that are necessary for good program evaluations, but also sound interventions. It is obvious, therefore, that the local risk reduction intervention projects should, to the extent possible, represent state of the art health education. By this, we mean they should incorporate concepts and strategies that represent the most up-to-date thinking reflected in the literature and in the highest levels of professional practice.

An example of this in a school curriculum might be focusing on the immediate psychological effects of smoking or on the process of deciding to smoke or not to, rather than on straight information sharing. Another example might be interventions that include predisposing, enabling, and reinforcing factors that affect a specific target population.

Most programs cannot and will not reach the state of the art without external assistance. To plan, conduct, and evaluate quality health education programs requires many professional skills and resources, some of which cannot logically or rationally be expected to be resident within local project staff. This line of thought figured heavily in the development of the evaluation contract between the State project manager and the Department of Health Education at the University of North Carolina School of Public Health. It was decided that technical assistance was needed on the implementation end of local projects. This would lead to the development of stronger intervention strategies and methods, thus increasing each project's potential impact on target populations. It was also thought that this approach to evaluation would maximize resources available to local projects and would make formative evaluation strategies easier.

Technical Assistance Model

All four North Carolina local projects are focused on preventing alcohol misuse and smoking within target populations of children and adolescents. All of the projects have a school-based component, which involves adoption or development of curricula to be implemented in junior high grades.

The curricula involve such things as decision-making skills, learning to identify the pressures to smoke or drink, and learning skills to fend off these influences. Curricula also focus on immediate effects of alcohol and smoking. In addition, all projects have teacher training as an aim. The community-based component varies greatly from project to project; however, all of the community strategies complement the school-based element. Examples are smoking cessation strategies aimed at adult role models in target populations, peer counseling within local church groups, and organizaing the community to develop alternative activities.

The State-level project manager has contracted with the Department of Health Education in the School of Public Health to conduct the project evaluations. It was decided during the evaluation contract negotiation that the State-level project manager would work as a member of the evaluation team. In addition, three of the regional health educators who work with the Division of Health Services have served as consultants to the evaluation team because the local health education-risk reduction projects in North Carolina fall into their territories.

To assist the local risk reduction projects in the planning, implementation, and evaluation of their programs, the evaluation team has engaged in a variety of activities. The evaluation team is divided into two subgroups. One concentrates on program planning and intervention strategies, and one on designing evaluation plans and developing appropriate data collection instruments.

The program planning team includes two faculty members and the state project manager; the evaluation team includes two faculty members, a doctoral student, and the state project manager. Both teams keep in close contact and are under

the direction of a faculty member who has been designated principal investigator and who is directly responsible to the state project director. The evaluation of local intervention projects is given initial priority. Second in priority is the development of a statewide survey of risk factor prevalence.

Our technical assistance activities have taken several forms continuing education, onsite consultations, provision of other resources, cooperative evaluation planning, and program monitoring. In the area of continuing education, we have provided, to date, three highly specific and tailored workshops for local project staff. Two workshops on tying objectives to strategies and evaluation and one on implementing and evaluating a curriculum design have been held. Each workshop was planned jointly by faculty, the State project manager, and local project staff and was done under the auspices of the School of Public Health's continuing education department. These continuing education sessions have resulted in some positive spin-offs, such as a sense of cohesiveness among the project staff and mutual sharing and problem solving.

We have also provided onsite consultations. Each local project has been jointly visited onsite no fewer than three times by the project manager and by at least one faculty member, often two. The main purpose of these onsite visits has been to follow up the previous workshops, to help local projects implement the concepts developed in those training sessions and to assist in developing plans to implement projects.

The evaluation team believes that evaluation begins with a good implementation plan that not only details objectives to meet needs of a distinct population, but also specifies the rationale for choosing the methods to be used. Developing the implementation plan has been a focal point for the technical assistance provided by the evaluation team.

Implementation plans have been important in helping local project staff identify components of their project that should be given priority. They have also helped staff troubleshoot those environmental factors that might impede project progress, for example, anticipating difficulties in getting school administrators to support teacher training.

Another technical assistance role we have undertaken is to help practitioners bridge the gap between incorporating new knowledge being produced and organizing existing knowledge. We have written a literature review entitled "Smoking and Alcohol Education/Prevention Programs for Adolescents." It has been given to each of the projects. In addition, we regularly find and distribute new relevant publications and make known to project staff relevant, locally available, continuing education opportunities, e.g., workshops conducted by the School of Public Health's Center for the Study of Early Adolescents. In short, we are constantly on the lookout for resources in the academic community and elsewhere that are relevant to the local risk reduction projects and, in whatever way possible, we are making those resources available.

We have also helped make cooperative evaluation planning possible. One of our primary operating principles has been—to the extent feasible and practical—that the program evaluations and the community surveys of risk factor prevalence should be "owned" by local project staff. Another principle is that the evaluation should not determine program form and substance but rather that the evaluation should be determined by the interventions. There is, however, a "creative tension" that results from working with projects that are in the process of clarifying objectives and proposed interventions.

Other roles of the evaluation team are controlling quality and ensuring some consistency across projects so that the data in the four projects are somewhat comparable.

Since each of the four North Carolina projects has a strong school health education component and since this is where each project is now concentrating its efforts, we have worked more intensively with the projects to develop quantitative data collection instruments for school settings. So far we have developed/adapted and pilot-tested instruments on the following subjects (all written at the fifth- or sixth-grade reading level):

1. Smoking behavior (common data items from the Centers for Disease Control (CDC)
2. Drinking behavior (CDC common data items)
3. Attitudes towards smoking

4. Attitudes toward alcohol
5. Smoking knowledge
6. Alcohol knowledge
7. Basic and extended demographics
8. Children's health locus of control
9. Self-concept
10. Decision-making process
11. Media and other influences on smoking and drinking
12. Social environment for drinking (e.g., behavior of peers, family)
13. Social environment for smoking
14. Future time orientation

The purpose of these questionnaires is to quantitatively measure the success of the specific interventions, as dependent variables, and, to some extent, as control (or population-sorting) variables. For example, do students with an initial internal locus of control benefit more from educational interventions than students with an initial low internal control?

Every project is not expected to use every questionnaire; in fact, some of the questionnaires may never be used. But whatever is used will be consistent across projects. The questionnaires were developed as a result of meetings with the local project staffs in which a list of teaching concept areas was generated and in which some interest was expressed in evaluation. Local project staff were involved in developing the instruments and were very involved in pilot testing the drafts.

The evaluation team now has a dual role in evaluating school components of the projects: 1) consulting with each project about the evaluation design (e.g., about administering the before and after test, training project staff in their administration, and developing appropriate comparison groups); and 2) analyzing data and writing reports. Since most school systems do not have the facilities, personnel, or other resources for data analysis, this function is appropriately done at the university.

Finally, we have given technical assistance in the area of program monitoring. One of the frequent weaknesses of the literature on health education evaluation is poorly documented interventions, a fact mentioned yesterday by Jonathan Fielding. Most evaluation reports describe the evaluation plan, hypotheses, and results, but neglect to adequately describe and document the interventions, themselves. To some extent this is partly responsible for our continually "reinventing the wheel" in health education. Noreen Clark alluded to this in her recently published review of the new Ross and Mico textbook. Clark wrote,

> Avoidance of the learning event is evident in most of our health literature. We describe how to plan programs, we discuss in measurable terms the outcomes arising from our interventions, but we neglect the interventions themselves.[1]

As part of our evaluation strategy for the risk reduction projects, we intend to carefully observe and document the program interventions. We know that programs will evolve and change over time and that merely using before, during, and after measures will not adequately reflect these program developments. Ideally, one would approach qualitative evaluation using a theoretical framework such as the grounded theory approach described by Pat Mullen.[2]

We probably will not have adequate resources to be as systematic as this approach would demand. Rather, we intend to implement qualitative evaluation through participant observations and through structured interviews with such program participants as school principals, teachers, students, parents, and project staffs, themselves. One of the potential strengths of the local projects is the link between the school and community components. The degree to which such linkages exist and reinforce each other will also be observed and documented. Furthermore, it is our intention to involve the project staffs in the planning and, to some extent, in the collection of these qualitative data.

Problems/Barriers

Those of us in North Carolina who are involved in the Health Education-Risk Reduction Project are attempting to develop relationships among the university evaluators and the State and local projects that are based on a technical assistance model. We say "attempting," because we have found several problems and barriers to such relationships. Program evaluators are normally expected to collect before-and-after program data and then, 3 years later, to declare the project to have been a success or failure. Such norms are set early in one's professional childhood, so to speak—and thus are difficult to change during the professional adolescent and adult years. Resolving these normative expectations is not something that can be accomplished quickly; it must be demonstrated through long-term, mutually beneficial relationships.

On the bureaucratic side, it has been difficult but not impossible to convince some persons within North Carolina State Government that it is both necessary and appropriate to use funds earmarked for evaluation to provide certain forms of technical assistance. We were successful on this front primarily by arguing that, in effect, "You've got to have something worth evaluating."

It is our position that evaluation begins with a good implementation plan that not only details objectives for distinct target populations but also specifies methods and rationales for choosing methods. Developing implementation plan has been a focal point for the technical assistance provided by the evaluation team.

The evaluation team, the State project manager, and regional health education consultants have shared responsibilities in providing consultation and technical assistance to improve these implementation plans. These roles and responsibilities have been difficult to define and delineate, so developing these plans has required much thought. It has been our experience that most practitioners know the basic elements of planning but have difficulty with the rationales and particularly with the theoretical linkages between project objectives and specific interventions or activities.

Another potential problem with a technical assistance approach to evaluation is the evaluators' losing their objectivity. We may become so involved and so identified with the implementation aspects that our judgment about evaluation becomes biased. We have no definitive answer for this problem other than to recognize it as a possibility and to try to remain as objective as possible in the evaluation aspects.

In summary, the Health Education-Risk Reduction Grant Program is an opportunity for our field that does not come often. To maximize this opportunity, the resources provided for evaluation must not remain separate from the programs, themselves. The goals of objective and scientific evaluation and the best possible interventions can be met simultaneously. Local program staffs do not have all the resources necessary to design and implement state-of-the-art programs, but this gap can be filled, to some extent, by external evaluators who adopt a technical assistance approach. It is also our belief that the long-term interests of health education will best be served when the "ownership" and responsibility for program evaluation remain with local project staff. Through a process of technical assistance consultation, and continuing education, professional skills can be developed and improved. In the long run, this will increase not only individual professional competence but also that of the field as a whole.

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Practical Tips for Evaluation

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Some view evaluation as a painful process. I would like to present evaluation as a friend--a way to compete successfully for the limited dollar.

Evaluation is the art of the possible. The task is to improve decisionmaking; the purpose is program improvement. We have a strong tendency to measure only what we can control and often this is not behavioral change. Several definitions of evaluation can be presented. One is "gathering information about a subject in order to make an effective decision regarding it."[1] Larry Green's definition of evaluation is a "a comparison of an object of interest with a standard of acceptability."[2]

The key ingredients in any definition of this term are some measurement or observation, a criterion for success, and a judgment of worth. The criterion for success is based on your standard for comparison. The standards for comparison can be historical, normative, absolute, theoretical, and negotiated. A historical standard compares one time with the time before it, as with pretest/posttest scores in an educational session. Normative standards compare one group with another, similar group, e.g., the results of one clinic with those from another clinic. An absolute standard is 100% success. This is really impossible to achieve in a community setting. A theoretical standard is developed from looking at the results of the research and literature of others. It provides a frame of reference for you to set your standard of comparison. A negotiated standard is a compromise worked out among all parties involved. The important thing to remember is that the standard for comparison must be worked out in advance of the evaluation. Why do we evaluate? We evaluate to determine if objectives were met; provide information for decision making; improve a program; establish or justify worth; and meet requirements of grants, requests for proposals, agencies, and other funding sources.

Evaluation begins in the beginning. When you determine objectives, you should formulate the evaluation questions and identify the criterion of success. Determine at this point how you will know when you win. This is the planning stage of program evaluation. Identify the program elements and determine the exact nature of the educational treatments and intervention activities in measurable terms.

The second stage of program evaluation is the implementation stage. Here you determine the program activities of concern and the possible side effects.

The third stage is the performance or impact stage. Every evaluation should ask something about outcomes of a program. This should include immediate impact and long-term outcomes.

There are two major kinds of evaluation. One is to improve the program; the other is to determine effectiveness. Process, which is a term that is interchangeable with formative evaluation, looks at the appropriateness of an educational strategy. It looks at the activities during various phases of the program.

The difference between process and evaluation lies in how the information is used rather than in the kinds of information gathered or when it was collected.

Outcome evaluation determines the effect of impact of the program. This type of evaluation asks questions such as, "Did a change occur in knowledge? Attitude? Behavior?" Most programs use an historical standard of acceptability that reflects a change in knowledge acquisition or knowledge application. Few programs ask questions about behavior.

Process evaluation looks at different attributes of a program, such as appointment systems and timing and recipients of the program. It looks at duration of effects, use of services and resources, appropriateness of the educational strategy, and patient/client satisfaction. Information for process evaluation can come from budget reports, clinic attendance records, broken appointments, personnel records, and home visits attempted and completed. It provides quality control, monitors progress of the program, and measures effort. Process evaluation is important because it illuminates the reasons for certain outcomes. It should be set up so that the information collected can be used by the program staff throughout the program.

We can evaluate programs from several perspectives. These constitute the categories of evaluation—effort, performance effectiveness, adequacy of performance, efficiency, and process.

Effort measures the quantity of activity, such as pamphlets distributed or films shown. *Performance effectiveness* measures the results or outcome. It asks, "Did a change occur?"

Adequacy of performance compares a program's effectiveness with its potential for success. One concern with this type of measurement is the degree of impact of the program upon its clients.

Efficiency measures the input and output of a program. A basic concern is whether there is a better way in terms of dollars, time, and personnel to get the same results in effort or effect. Finally, *process* looks at how and why a program works or doesn't.

The weakness of many evaluation plans is that they are informal and fragmented, with little commitment to use the information generated. The focus of program evaluation is so narrow that the results have little applicability. One other major weakness is the lack of finances and personnel to accomplish a realistic evaluation.

The evaluation process reviews objectives and identifies outcomes. Next, you have to decide on evaluation questions and consider and select standards for comparison. Select the methods of evaluation and plan the analysis of the data before they are collected. At the conclusion of the evaluation process, communicate the results to your peers and fellow employees. Don't simply file the report. Let others know what you're doing.

The last step in the evaluation process is evaluating the evaluation. An evaluation should be educational. It should show weaknesses and places to change which can be to your advantage.

Evaluation Designs and Methods

This describes the way people are grouped to receive the program. All evaluation strategies begin with a recordkeeping system. Some use a system of collecting routine data on a regular basis. Others use a benchmark system in which data are collected after a predetermined amount of time, e.g., 6 months.

The most common design in programs today is the single-group design, typically known as the pretest/posttest design. It is displayed as follows:

$$0_1 \times 0_2$$

An example of this design would be a program aimed at determining the school dropout rate, conducting an educational intervention directed at potential dropouts, and then determining the dropout rate at the conclusion of the program. This type of design has the problem of competing explanations for the results you achieve. It is important to consider possible competing explanations or threats to validity. I refer to these threats as fuel for competing explanations. The idea behind the selection of an evaluation design is ruling out as many competing explanations for the success of your program as you can afford to do.

The threats of most concern to you and your program are as follows:

- History—Some major event happens between the first and second measurement.
- Maturation—The process that occurs in subjects as they get tired, older, and hungry. It can be a biologic or a psychologic maturation.
- Testing—The effects of taking one test upon the scores of the subsequent test. People tend to do better the second time they take a test. Also, the more novel the testing device the more effect it will have. Educators actually consider the act of testing to be part of the educational process.
- Instrumentation—The changes in calibration of instruments and the differences in how observers score and interview. One way to counter these shifts is to shuffle observers between the pretest and posttest phases.
- Regression—Scores tend to work toward the mean. If we select extreme scores, the high get lower and the lower get higher. Some people refer to this phenomenon as "beginner's luck." It is one of the most difficult threats to handle.
- Selection—Differences in the selection of groups (subjects) for the program, such as putting the "good" patients in the educational program.
- Attrition—The loss of participants from the program, for whatever reason.

Another major design used in educational programs involves two groups, one educational and one for comparison. Although this design may be possible in your situation, it has a disadvantage, namely, that the groups often are not equivalent.

$$\frac{0_1 \times 0_2}{0_3 \times 0_4}$$

To use this design, find a clinic, classroom, or neighborhood group, and find a group to match with it. One gets the program and the other does not. Try to look for natural groups. The more similar the pretest scores for both groups, the more effective control you have and the stronger case for your results.

When it is possible to assign the educational intervention randomly to the groups, you have an experimental design such as follows:

$$R \quad 0_1 \times 0_2$$

$$R \quad 0_3 \quad 0_4$$

This is the most common experimental design used in educational programs. It rules out the competing explanations that plague the educational practitioner who is trying to document effectiveness. If you don't randomize the groups who will receive your program, then judgment should be used to ensure that you are dealing with comparable groups. An experimental design may be difficult or impossible for you to do. If you have little control over what happens in your program, applying an experimental design only invites trouble. If you design a randomized evaluation, have a backup, quasi-experimental option to fall back on if the randomization fails.

One quasi-experimental design that may be useful in an educational program is the one-group, time-series design, depicted as follows:

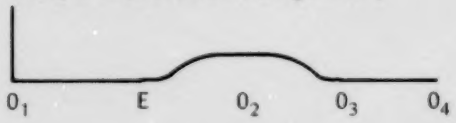
T T T T T T T T T

0 0 0 0 0 0 0 0 0

In this design, you have multiple measures before the educational program, which controls for history and maturation and helps guard against unpredictable events. It is a possibility when you can't get a control group or funds to match a comparison group. Here the group serves as its own control. It is also useful with self-selected participants. However, it is always better to have two groups, as it strengthens your evaluation.

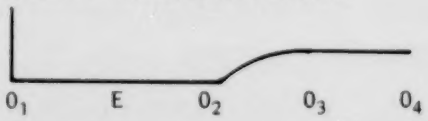
The timing of the educational program and your evaluation efforts is crucial in hunting what Larry Green terms "the elusive effect." He describes these effects in detail; I simply want to refer to three of them that have a particular impact on educational evaluation. The first is "decay of impact" or the "backsliding effect." This is seen with complex behavior-change programs, such as smoking cessation, diet changes, and complicated drug programs.

Decay of impact ("backsliding effect")



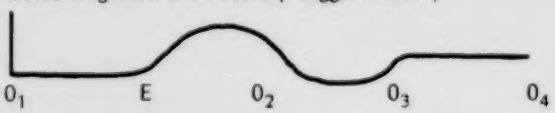
The second effect is "delay of impact" or the "sleeper effect." This is seen in programs in which it takes time to bring about the desired change, such as in attitude and actual behavior-change programs.

Delay of impact ("sleeper effect")



The third effect is "borrowing from the future" or the "trigger effect." Here, clients use services early after the intervention because of preceived immediate benefits. This may be desirable in prenatal care programs or cancer-screening programs.

Borrowing from the Future ("trigger effect")



Because of all of these effects, it is highly likely that you may overestimate or underestimate the effects of your program if you only have one observation in your evaluation plan.

How should you choose an evaluation design? Your first concern is getting the design that will give you the most useful results! One question to ask yourself is, "What is known about the subject and my educational approach?"

If the answer is "little," use a single-group case design and a descriptive study. Describe the participants and results. This a pre-experimental design with all the threats of history, maturation, attrition, and instrumentation. But it is useful when you're exploring new ideas such as acupuncture clinics and biofeedback programs.

If, on the other hand, you know a great deal about your subject and educational approach, your choice is based on what you want to accomplish. Try to have a control or comparison group. Look for the natural groups in your service area.

What is the chance of your program's effect being detected? Most social programs are weak-to-moderate in their ability to detect an effect. You lose the ability to detect program impact when the program is not delivered equally, when the quality of staff differs, or when you can't control the variables in the field. Try to enhance the chance of detecting an effect by increasing the sample size, using reliable measures, and monitoring the activities of your program as closely as possible.

When do you expect the effect to appear? If you expect the effect to be manifest immediately, you are very lucky and can choose from many of the available designs. If it will take months to see any impact, then some design that uses time-series measures is desirable.

Do you need to prove cause-and-effect? If you do, then randomization is an important ingredient in your evaluation design. It is important when you expect the effect to be small. If you can't randomize, try to match groups. You likely will get an underestimate of your program effects.

To be effective, evaluation must produce timely and helpful information. The activities to include when conducting evaluation include the following:

- Formulate the evaluation questions. These should be based on program goals and objectives.
- Develop the evaluation design. How will you group subjects? If it is for improvement of the program only, use case studies or noncomparison designs. If you want to know effectiveness, you need a stronger design.
- Plan information collection. How will you collect information? Using what system? How will it fit into routine activities?
- Collect evaluation information. This is the actual collection of data.
- Plan and conduct information analysis. Summarize and analyze data to find answers to evaluation questions.
- Plan and conduct management of evaluation. Prepare and follow a schedule of activities. Who does what, when?
- Report evaluation information. Report the results of your evaluation efforts to your staff and colleagues. Make presentations to others in your organization. Share your results.

In reviewing educational programs and reported evaluation problems, the most common obstacles we face are that the objectives of the program are not measurable; the necessary data are not available or may be inaccurate; there are not enough participants in the program; it is hard to find a control population; evaluation efforts are seen as last-minute thoughts or afterthoughts; and the time frame is unrealistic for health education.

The key ingredients in evaluation are measurement, a criterion for success, and—most important—a judgment of worth. You must provide this through careful and thoughtful analysis.

All human disciplined creations—poetry, music, mathematics—have form. Humans put great stress on the content of their creations, not realizing that without strong structure, no matter how rich the content, the creations are weak and sterile.* An evaluation plan can give you that needed structure.[3-6]

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VI. PERSPECTIVES FOR THE FUTURE

Realities of the New Federalism
(Abstract)

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Stan Matek discussed the components of the New Federalism ("Reaganomics") in terms of its goals (restoring productive investment) and its methods (detaxation, deregulation, decentralization, and defense spending). He emphasized that the key to the Reagan model is the belief that economic self-interest is the real and proper motive for behavior in the realm of American business. Matek then sketched out how a health educator can effectively communicate and succeed in such an environment. In attempting to secure funding, for example, arguing that programs or even institutions are in jeopardy is not likely to be persuasive. On the other hand, linking baseline data on health status with cost-benefit analysis–the ability to sell what you have to offer on the basis of self-interest to a buyer–does work. So does marketing. As Matek used that term, it included creating simplified messages and repeating them in the mass media (particularly cable television), but it invoked far more. the creating of incentives to use those messages.

A Reaction for Health Education
(Abstract)

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Echoing Stan Matek's characterization of the New Federalism ("Reaganomics") as a philosophy and belief system, Dr. Kreuter cautioned health educators to keep perspective and not react defensively in the face of massive Federal cuts. Rather, he urged them to keep in mind the cyclical, almost ecological nature of Federal policy. He suggested that health promotion advocates creatively apply the salient dimension of Rene Dubos' philosophy of health: adaptation. As in illustration, Kreuter pointed out that the Health Education-Risk Reduction Grant Program has produced some exemplary risk reduction programs that have generated spin-off programs, many of which were supported by the private sector. He argued that such a multiplier effect was analogous to the Administration's position and that public health educators would be wise to use this concept in the political arena as they make their case for precious resources and a legitimate place in the public health picture.

Health Education—The Future

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In the trendier "fast lanes" of American life, it seems fashionable, unfortunately, even chic, to see the target of health education as a negation of human pleasure, as a chore, a programmatic equivalent of one's "granny" urging prudence. As one of Mark Twain's characters said, "The only way to keep your health is to eat what you don't want, drink what you don't like, and do what you'd druther not."

As with so much of Twain's writing, there is an uncomfortable nubbin of truth in that. Part of the problem, of course, is society's "druthers." Many things that people want like, and perceive as their heart's desire are the consequences of a lot of hard work and cold cash in Madison Avenue and in the corporate headquarters of cigarette manufacturers, distillers, and television networks. Another part of the problem, until recently, was the lack of much in the way of an institutional base in the public sector to organize community responses to counter such skillful promotion of unhealthy habits. That has changed, at least in part, as a result of the 3 years of health education-risk reduction funding we have provided, and the clear statutory intent that these activities are allowable uses of Prevention and Preventive Health Services Block Grant funds. This gathering of 200 risk reduction professionals is strong testimony that the capacity of the public sector for health education and health promotion became stronger in the 1970's. Your programs will be a central element of the institutional base for health education in the 1980's.

Let me take a few moments to review what I perceive as the institutional base on which we can build to accomplish our prevention objectives.

The first element is the community. The primary emphasis of our grant support to States, our management workshops, and our technical assistance has been to foster an organized approach to health education at the community level. Neither the funding nor the intent was aimed at accomplishing that in every community in every State by 1981. However, establishing models and replicating them, with the resources available in community after community, is a challenging but attainable target for the 1980's The Health Education-Risk Reduction Programs provide a solid beginning. In addition to the 31 general interventions, 59 of the 125 smoking and alcohol demonstration projects are wholly or partially community based. I am hopeful that the additional funds provided this year to "showcase" exceptional programs will help speed adoption of similar programs within each State.

A second institutional base is the school. Several years ago, Bob Johnson, then the President of the private-sector National Center for Health Education, noted that the resurgent interest in health education had a number of wellsprings, including cost containment, patient education, the self-care movement, the wellness movement, the consumer movement, and school health education. Bob made some interesting observations about the latter source: Persons interested in school health come from a variety of views Some discount influencing adult behavior and would concentrate all efforts on children. Others see the ultimate question to be one of value formation, in this instance, the acceptance of health as a high value in American culture. Recognizing that value formation is a lengthy process, they, too, would concentrate on children in school

To this I would add that some of us see school health education as potentially the most enduring and effective approach by which to achieve health-related behavior objectives. As you know, 93 of the smoking and alcohol demonstrations are entirely or partially school based. In addition, the Centers for Disease Control's Center for Health Promotion and

Education has been involved in the development of school health curricula for some years. Anecdotal and qualitative evaluations have been very positive. We now have under way a major, 3-year, $1 million study to answer such questions as the following. Is school health education effective, as measured by knowledge, attitudinal, and behavioral outcomes? Specifically, how effective is the School Health Curriculum Project in comparison with the prominent curricula? Is it cost-effective? These are difficult research questions, but we hope to have quantitative evidence of effectiveness at the end of this project. In the meantime, thousands of teachers and schools are today providing high-quality health education—an awesome beginning. Still, a large gap remains between what schools might do and what they actually do. We need to reduce that gap in the 1980's.

The third institutional base that I want to mention is the primary care system. Health care providers and the organizations in which they function can be powerful forces in educating the public about health, and they can be invaluable in bringing about, or lending credibility to, health education-risk reduction activities in other settings. To be sure, there are constraints—for example, the fact that medical education often ill prepares practitioners for their roles, and the fact that the poor, who have special health education needs, use the health care system differently from those who are economically better off. The fact remains that primary care offers a setting that is appropriate for and conducive to many forms of health education.

The health care system can be a health education resource for the 1980's. A 1978 survey of 130 hospitals—part of our collaboration with the American Hospital Association—had some interesting findings. (The survey response is not predictive of all hospitals, but it is an interesting indicator of hospital posture.) The overwhelming majority (79%) agreed or strongly agreed that hospitals should be involved in health education for the public. Yet, only one-third actively solicited or promoted community involvement in health education activities. Evidently, half of these hospitals agree they should be involved, but are not.

Physicians also can do more. Two years ago, I spent a day with the House of Delegates of the American College of Physicians; these very clinically oriented doctors, internists, were genuinely interested in defining a role they could play in promoting health. As one physician told me, he was frustrated by his lack of skill in causing patients to stop smoking or drinking heavily, but he was even more frustrated by the modest impact he could have on the health problems that these behaviors were causing. A large gap exists between what health care providers might do and what they actually do. We need to reduce that gap in the 1980's

A fourth institutional base, quite obviously, is the State health agency. An important objective of this conference is to enable you to exchange information, views, and approaches—not only on technical issues but also an institutional survival. The State-level risk reduction coordinators constitute the core of a group that must provide leadership, make the compelling justifications, supply the surveillance and evaluate data to decisionmakers, and generally stimulate a positive State and community attitude towards health education. We at the Center for Health Promotion and Education are pleased that we were able to provide support to coalesce and define this State focus. We intend to continue close program liaison with you.

Under the Prevention and Preventive Health Services Block Grant, the primary funding responsibility for health education now rests with the States. Decisions about what to fund, even whether to fund health education and risk reduction activities, will be made at the State level. Secretary Schweiker recently testified before a Senate hearing that the Department of Health and Human Services will continue to be a partner with, and a catalyst for, health promotion programs in States. You may be sure that we will be encouraging, promoting, evaluating, and disseminating information on health education—risk reduction processes in States. We at the Center obviously hope that the 1980's will be characterized by growth in the number of communities with organized approaches to health education, which is another way of saying communities that are effectively reducing the prevalence of smoking, alcohol misuse, obesity, high blood pressure, accidental injury, uncontrolled stress, and lack of physical fitness. If that end is to be reached, it will be essential for you to successfully claim sufficient resources to sustain the performance level, visibility, and credibility you have established. I profoundly hope this conference has been valuable to you in that regard, both in the formal presentations and in personal exchanges with your colleagues.

The fifth institution I want to mention is conceptually quite different from the others; it is the family. For a society to flourish, when its ultimate nurturing unit, the family, is unhealthy, is a questionable prospect in my mind. It is unfortunately true that family structure is, at lease, changing, and, to some observers, changing in ways detrimental to family development. Regardless of the interpretation one makes, there are facts that must be considered. The 1970's saw some unfortunate landmarks reached. In 1975, for the first time, 1 million divorces were granted. The number of children in divorced homes had reached 1 million 3 years earlier. One million abortions—pretty clear indicators of unwanted pregnancies—were performed in 1977. As might be imagined, one-parent households increased steadily during the 1970's.

All of this may not suggest an institution on which to build successful health education, but let me offer an alternative logic. First, the family is an institution with a troubled course, but that does not automatically mean it is not a potent force in affecting behavior choice. Second, while health education can be fostered by healthy family development, healthy family development can also be fostered by health education and health promotion. Consider violence, an area our Center has recently begun to examine epidemiologically. One category, child abuse, may be preventable in many cases. One of our epidemiologists, Dr. Janine Jason, has been doing surveillance of child abuse in Georgia. Household factors that appear to be associated with an increase in child abuse include large families; families without the genetic mother or without the genetic father present; and low socioeconomic status, defined as families ever needing Aid to Families with Dependent Children. Isn't it possible that information and education about the use of family planning services may have an impact on child abuse rates? Isn't it possible that educational approaches that improve self-esteem and decision skills can improve health and thereby contribute to improved socioeconomic status?

I believe health education has done much to improve the capabilities and the development of families. I also believe we need the positive influence of healthy families on individual behavioral decisions fully as much as we need the other institutions I have mentioned.

In short, when I consider my theme, the future of health education, it presupposes that we will both rely on and extend the institutional bases that now exist as support systems for health education and risk reduction in the 1980's.

Of course, another strength we can rely on is the diversity of forces that can be marshalled. Our weapons include not just the institutions, themselves, but the societal forces that influence the health system, schools, communities, and families. Your resource inventories cover many of these—youth organizations, parents and parenting groups, voluntary organizations, professional societies, special interest groups, the media, and many others. Last year, you may recall, we published a large, orange-covered book that summarized all of the 166 Health Education-Risk Reduction Programs. The list of that project's sponsors is an example, in miniature, of this diversity. This year's program for the American Public Health Association conference also illustrates this. Not only the Health Education Section but also several others sponsored health education sessions—on a remarkable array of topics. Perhaps it is this diversity that makes it so difficult to describe what health education is and does. Health education is the "Rubik's Cube" of public health. It will be no simple task to get all the faces and the forces line up, but it will be very satisfying when we do.

But what about barriers? What do we face that threatens our success? You will expect me to identify lack of funding as a threat, but, frankly, it is more reasonable to call that a management problem than a barrier. Let's be realistic. Medical care will always claim an overwhelming majority of the national expenditure for health. Medical care demand will not diminish, nor will costs suddenly retreat, freeing up large, new public sector revenues for other health priorities. However, there are health education resources around. Naturally, you should vigorously pursue a fair share of the block grant in your States, but I really mean private sector and independent sector resources. We can mobilize community support—funds, but also people resources, inkind support, third-party reimbursement in health care settings, philanthropy, corporate help, and so on.

A potentially more serious barrier is fragmentation. We are unlikely to attract community resources to health education objectives if we haven't got our act together. I have emphasized our commitment to an organized approach to health education, and the vital role that risk reduction programs will have to fulfill, because such organization appears to be the best hope we have of avoiding uncoordinated, fragmented, unassessable health education activities.

Another threat is, ironically, unbridled enthusiasm for prevention; another, the hard reality of an aging population. While these two notions may seem unrealistic, there is a common issue within them.

First, the demographic question—the "graying" of America. The next decade will see our aging population continue to grow. The number of persons ages 65-74 is projected to grow from 15,412,000 in 1980 to 17,613,000 in 1990, an increase of 2.2 million; and persons 75+ from 9,112,000 to 11,402,000, an increase of 2.3 million. Now, there is much health education can offer to older Americans to reduce health problems and improve the quality of life. Nevertheless, it is also true that not all risks of preventable conditons can now be reversed if the risk factors have persisted over a lifetime. These population increases are likely to increase the prevalence of a number of chronic problems; moreover, people in these age groups, especially those 75 and over, are heavy users of costly forms of care.

Second, the danger of unbridled enthusiasm. It is apparent that much of the new interest in prevention rests on the premise that it will contain costs—usually, this means health care costs. I can document that a number of specific prevention interventions have excellent returns on their investment. I think it likely, even if it is not documented at this point, that additional investments in community health education and risk reduction efforts would return positive economic benefits to society. I doubt, however, that we can claim that health education as an entity, or even broader, prevention as an entity, will reduce health care costs next year—or any year in the intermediate term, at least. In other words, I suspect that a prevention dollar invested today is a good investment—that is, all the savings from reduced morbidity next year and the year after and so on, even when discounted back to their present worth, would exceed that investment. These savings include medical savings in future years, elimination of the lost productivity due to illness and disability, and similar benefits. But that is rather different from saying medical care costs will decrease or even be contained in a measurable way that can be directly attributed to prevention.

One reason I fear this to be so is the demographic trend in population age that I cited. Older persons have heavier medical care requirements. This is in part a simple matter of biology, but it is also due in part to the likelihood that they had much less access to preventive services, including the facts we now have about the health consequences of personal behavior. Most projections I have seen include a trend toward rising hospitalizations, nursing home care, prescription drug use, and the like, largely as a consequence of the shift in population. The plain facts, it seems to me, are that our efforts today with children will change these trends very little for many years, and our work with adults, while it will have some rather immediate benefits in some risks, cannot overcome the counter trends in age.

We should not encourage decisionmakers to expect this sort of dramatic impact on costs as a result of health education. To do so is a prescription for failure, a blueprint for disillusionment. Rather, I think we should continue to talk in terms of things we can legitimately claim as impacts. Projects such as the Stanford three-community study and the North Karelia, Finland, study (and not too far in the future, I would venture to guess, Pennsylvania's Lycoming County Project) have demonstrated favorable outcomes in disease reduction, such as heart attack and stroke rates. Our Health Education-Risk Reduction Projects are measuring progress towards objectives expressed as behaviorai outcomes—that is, smoking rates, alcohol use, prevalence rates of uncontrolled hypertension. Given the time to get our surveillance systems in place, our baseline data published, and our evaluation results reported, we should have a robust and vivid case to make for health education-risk reduction. I argue that this is the best rationale we have for prevention—it helps people. And we are on solid ground, epidemiologically, in claiming so.

In closing, I would like to describe a vision I have of health education in the future. It involves a community that has made a commitment to health education for its citizens. In this community, children attend schools that use tested, effective health education curricula and risk reduction approaches. Health care providers are involved in community education as well as patient education. Because this is a community with an organized approach to health education, it has surveillance data to describe its problems, target its efforts, and evaluate its progress. These data have helped to mobilize community support, and, because they show that the program is starting to have real effects, they have convinced neighboring communities to do the same. While funding is still hard to obtain, enough different groups are involved to maintain the momentum.

Is this vision naive, totally unattainable? Perhaps. Every one of us knows the barriers and constraints. Yet, we have the blueprint for such a hypothetical community, and if we have the skill, inventiveness, and most of all the will, the 1980's can be a decade of real progress. On every side, the rhetoric of prevention has been endorsed and hailed by decisionmakers. But only your hard work can translate rhetorical support into improved health outcomes.

GROUP DISCUSSION SESSIONS

PROGRAM METHODOLOGIES

Smoking

Catherine Allaire, Rhode Island

The Rhode Island Community Smoking and Alcohol Project is designed to provide a comprehensive integrated model of health education in grades K-12. Eight private, nonprofit health agencies engaged in health education and disease prevention bring information, training, services, and materials to students and teachers in the school-based program. Coordination and technical assistance to the subcontractors and school administrators are provided by the project coordinator, who conducts monthly meetings to clarify agency roles within the project. Each agency's workplans and timelines detail strategies and techniques ranging from individual counseling to team teaching of large groups. Another component of the project is the community saturation effort that promotes a smoking awareness campaign to as many levels of the target population as possible.

Elaine Bartelt, Florida

Community Alcohol and Smoking Prevention (CASP) of Apalachee Community Mental Health Services has developed "Help Yourself," a curriculum being piloted in Leon County, Florida, with approximately 2,000 students. The curriculum is aimed at preschool-kindergarten students and fourth, fifth, seventh, and eighth graders; special programs which emphasize the effects of maternal drinking and smoking on the fetus are extended to the Teenage Pregnancy Program and the Supplemental Food Program for Women, Infants and Children. The curriculum utilizes games, role playing, and experiential and written activities; the preschool level features flannel-graph poster stories, hand puppets, and musical expression, while the higher grade levels include an audiovisual component. Evaluation of the current program by pre- and posttests indicated a 95 percent increase in knowledge in the preschool-kindergarten group. In an earlier field test, fifth graders showed a 35 percent increase in alcohol knowledge and positive, responsible attitudes (over 4 on a 5-point Lichert scale) toward smoking and drinking; eighth graders showed no significant increases. Teacher evaluation was also rated at over 4 on the 5-point scale for all programs.

Patty Hansen, Missouri

The Independence, Missouri, Health Education Project is a 5-year program focusing on health promotion and risk reduction. The project includes a health education program for schoolchildren, risk reduction efforts aimed at adolescents' smoking and drinking behaviors, and primary prevention activities for the family and community. Based on a 3-year implementation of the "Know Your Body" program, which reduced tobacco consumption among participating junior high school students by 7 percent, the project hopes to achieve by 1984 significant reductions in smoking, alcoholism, obesity, lack of exercise, stress, hypertension, and accidents among students in participating schools in the Independence School District. A similar component is being offered to the community as a whole. The Adolescent Smoking and Alcohol Risk Reduction Project (funded by a grant made possible by the Centers for Disease Control) provides inservice teacher training as well as intervention programs within school settings for adolescents on (1) smoking cessation groups, (2) life skills training, and (3) alcohol interest groups.

Alan Y. Hayashi, California

The Health Promotion Consortium of Monterey County and the Smoking Withdrawal Action Project (SWAP) of the Monterey County Department of Health cosponsor a smoking cessation course for adults in Salinas, California. The course consists of eight 2-hour sessions, which are often followed by a 15-minute walk. Recommended class size is 15 participants, with instruction provided by 2 coleaders. The QUIT (Query Yourself, Understand Yourself, Identify Solutions, Try It Out) model, a method of behavioral self-management, is the basis of the course. Using the model, smokers examine their habit and the factors in themselves and their environments that help or hinder their attempts to quit. Next, participants analyze their self-observations to identify patterns, determine the functions smoking serves, and the effect smoking has on them. Participants identify solutions, methods, and skills that can be used to reduce smoking. Finally, participants design their own action plans, stating their goals, the solutions they will try, and the rewards they will give themselves if they achieve their goals. To evaluate the course pre- and postquestionnaires are distributed, and 3-, 6-, and 12-month followup interviews are conducted. Preliminary data from an immediate postevaluation questionnaire completed by 255 participants indicated a 72 percent cessation rate. The course is part of the Stanford Heart Disease Prevention Program Five Cities Project.

Palm Jong, Massachusetts

Based in the South Cove Community Health Center, Asian Teen Life (ATL) is a health education outreach project to deter tobacco and alcohol abuse among 13- to 18-year-olds in the Asian community of Boston, Massachusetts. ATL's primary objective is to increase Asian adolescents' knowledge of the health hazards of smoking and alcohol abuse and to facilitate positive behavioral change among those who already smoke and drink. Workshops are conducted on such topics as peer pressure, family influence, decision making, and stress management. The curriculum incorporates Gil Botvin's nationally tested Life Skills Training program, expanded to address particular needs of Asian-American teenagers and utilizing materials in both Chinese and English. Parents are contacted through special workshops and mailings of more than 2,000 bilingual brochures. Some modifications have been made in response to continuing assessments; formal evaluations will be made on completion of the project. It is expected that recommendations based on this evaluation will prove useful in setting up similar programs.

Thomas G. Lacher and Carol S. Pittman, Florida

The HAPPS (Health Analysis and Planning for Preventive Services) Management System, used in the Putnam County, Florida, Adolescent Smoking and Alcohol Project, is a 17-step rational systems approach for planning, implementing, and evaluating a variety of health programs in several States. The system was designed by the Centers for Disease Control. One result of the system is that the many guidelines and requirements of both the national program and the State program can be organized into a common conceptual framework. Within this framework a progressive series of steps are established, beginning with broad goal selection and ending with a determination of future program direction. The system's framework also helps to steer the project on a logical sequence of operations; this facet has helped the project meet its objectives and identify problem areas. Finally, the entire project can be summarized in a 17-step flowchart, which facilitates comparative project analysis.

Scottie Stevenson, Texas

The Tobacco and Alcohol Risk Reduction Program is designed to teach students in grades 4-7 decision making in relation to tobacco and alcohol use. The program includes a student survey, a unit on decision-making skills, tobacco and alcohol information, a section on interviewing adults about their tobacco and alcohol decisions, a student contract, and a final student survey. The program resulted in a decrease in the percentage of students who planned to use tobacco as an adult from 21 percent (survey) to 10 percent (contracts) and an increase in the percentage of students who believed that tobacco use is bad for health from 58 percent to 79 percent. Survey responses indicated that 23 percent of the students did not know that tobacco use is bad for health. Contract responses indicated that the number of students who did not know that tobacco is bad for health decreased to 4 percent and that the number who did not believe that tobacco is bad for health decreased to 6 percent.

Alcohol

Sennet Burns, North Carolina

The Health Education-Risk Reduction Program of the Franklin County, North Carolina, Health Department offers a school-based alcohol education program aimed at

students in grades 4-7. Rather than using factual material to dissuade students from drinking , the program employs a skills-building curriculum designed to enable students to resist family, peer, and media pressures to drink. Social, communication, and decision-making skills are developed through group problem solving, group decision making, group role playing, and self-health assessment activities designed to heighten self-esteem. Parent-teacher committees in each school fashion 4-year, comprehensive, sequential curricula. Teachers receive a 20-hour training program, which they help to design, so that the Franklin County alcohol education program may be continued after demonstration funds are exhausted and risk reduction staff are no longer available.

Robert A. Horwitz, Connecticut

The Health Education-Risk Reduction Program of the Adolescent Crisis Unit for Treatment and Evaluation (ACUTE) in New Haven, Connecticut, focuses on stress. Studies indicate that substance abuse programs that emphasize psychological factors (e.g., self-esteem and decision-making skills) are more effective than programs that emphasize factual presentations. The program is based on the observation that young people turn to use of alcohol, cigarettes, and other drugs partly because they expect use of these substances to reduce stress. Now in its second year, ACUTE's program teaches students in grades 6-9 what stress is; how they can recognize when they are under stress and what causes this condition; whether alcohol and other substances are effective in reducing stress; and alternative, healthier ways of coping with stress, such as exercise or techniques of relaxation and assertiveness. In addition to classroom stress-awareness/stress-reduction workshops, the program features training of teachers and parents, peer counseling, and community outreach.

Mary Kaptain, Iowa

The Southeast Polk School District Health Education-Risk Reduction Program is a comprehensive student and community education program targeting 3,232 students in grades K-12, their teachers, and their parents. Methods include (1) a 4-part classroom series for grades K-6 emphasizing self-esteem, peer pressure, decision making, and exploration of attitudes and behaviors toward alcohol misuse, and (2) peer-helping programs and adolescent-parent values discussion for grades 7-12. Additional approaches include faculty and counselor training sessions; adult education classes on stress management, alcohol information, nutrition, physical fitness, and relationship skills; informational meetings for parents on alcohol and drugs, divorce, and parent-teen communication; new games training; and an alternatives festival, which is an all-day family and community event to promote healthy lifestyles and community cooperation.

Sherry McCarter, Virginia

The Region Ten Community Services Board's Organized Community Approach to Reduce Risks of Adolescent Alcohol Abuse and Smoking in a Small Town and Rural Setting Project serves Planning District 10 in central Virginia. The 21,280-square-mile area encompasses the city of Charlottesville and five surrounding counties. The total population is 143,597, of which 24,455 are children in grades K-12. The target groups in Planning District 10 are 9- to 18-year-old schoolchildren, their parents, professionals, and the remaining adult population. The first-year objectives were to implement the CASPAR (Cambridge and Somerville Program for Alcoholism Rehabilitation) alcohol education curriculum, to develop and implement a smoking education curriculum, and to conduct inservice training workshops for teachers in the public schools within Planning District 10. All objectives were completed during the project year. The first project year was considered a pilot year, and activities were limited for evaluation purposes. A total of 2,002 students in grades 3, 4, 5, 7, 8, and 10 in 3 localities received the CASPAR curriculum, which was implemented by 22 teachers trained by project staff.

Clay Roberts, Washington

Tobacco and alcohol programs in the Sumner, Washington, area will be unified into a 4-year, seven-component project called STARR (Sumner Tobacco and Alcohol Risk Reduction). The first component will feature teacher training, classroom observations, and demonstration lessons utilizing the "Here's Looking at You" alcohol education curriculum developed by Seattle, Washington, Educational Service District #121; "If Drugs Are the Answer, Who Knows the Questions?"; "Drinking, Driving, Deciding"; and "Fetal Alcohol Syndrome." The second component will consist of parent education in prevention and intervention strategies in tobacco and alcohol use and of provider education as part of a comprehensive approach to reducing the incidence of drunken driving. The third component will be a peer counseling program. The fourth component will feature

positive adult role models from sports and media ("Super-STARRs"), positive student role models, and "natural high" activities for youth organizations. The fifth component will consist of a newsletter aimed at secondary school students and their parents and involvement with the National Institute on Alcohol Abuse and Alcoholism national media campaign. The sixth component will coordinate "emphasis patrols" of the Sumner and Bonney Lake Police Departments; these patrols will identify and arrest drunken drivers. The seventh component will analyze, evaluate, revise, and update present school health policies.

Beverly Summers, Kansas

The health education-risk reduction program for children and adolescents of Butler and Greenwood Counties, Kansas, uses the "Here's Looking at You" alcohol education program for grades K-12 and the School Health Curriculum Project for grades K-7; during the spring of 1982 the "Here's Looking at You" and "If Drugs Are the Answer . . . Who Knows the Questions?" curricula were to be used. The program includes teacher training and program promotion among parents. Parents were provided opportunities to examine curriculum materials, ask questions about the program, and exempt their children from the programs. Responses to the program after the fall 1981 implementation were positive, and plans call for incorporating the New Hampshire Lung Curriculum and the Power of Positive Parenting curriculum into the program.

Stress

Rebecca Hill, Arizona

"Better Health Through Self-Awareness," a health education-risk reduction (HERR) program of the Pima County Health Department in Tucson, Arizona, is a cooperative effort of several local community health centers. The program features health education and chronic disease prevention activities designed for women, the elderly, the handicapped, ethnic minorities, and junior and senior high school students. Youth-oriented strategies include sociodrama, youth alternatives camps, peer counseling, and media and school prevention campaigns. The adult component emphasizes stress-management activities, which include biofeedback, autogenics-relaxation techniques, clowning (in which participants wear costumes and greasepaint and relieve tension through laughter), HERR sessions, and aerobic dancing.

Richard Needle, Minnesota

"Intervention Strategies to Reduce Health Risks to Adolescents From Smoking and Alcohol" in Wright County, Minnesota, develops prevention intervention strategies for tobacco and alcohol use among sixth, seventh, and eighth graders and their families. The four intervention strategies--peer-led and teacher-led groups with and without family involvement--reflect the view that peers and parents influence adolescents' use of alcohol and tobacco. Project phases include (1) collecting data, pretesting adolescents and consenting families, training peer leaders and teachers, and preparing materials and health curricula based on data collected; (2) implementing the four educational interventions, adopting the Adolescent-Family Health Education Project curriculum emphasizing affective learning , selecting peer leaders and teaching them group facilitation, and arranging 2-hour discussion groups of six to eight parents each month that emphasize communication and negotiation skills; and (3) evaluating observation sheets filled out by the class and independent observers, reviewing the recommendations of the Centers for Disease Control, measuring cognitive and psychomotor skills, and assessing behavioral changes related to tobacco and alcohol.

Dale A. Turner, California

The Healthy Lifestyle Programs, offered by the Department of Public Health in San Francisco, help organizations and their employees recognize and correct health hazards through environmental and organizational improvement and through personal behavior change. Stress and its management are examined as a health risk and as a factor in unhealthy behaviors such as smoking, poor eating habits, and unsafe handling of hazardous materials. The program offers 16-hour workshops to develop skills in stressor recognition and diagnosis, deep relaxation, communications improvement (assertion and active listening), support network improvement, time management, and nutrition and fitness. Rather than using a set curriculum, each workshop is tailored to the specific needs of an audience. Following a workshop, each participant completes a behavior change contract, which becomes the basis for 1-, 3-, and 6-month followup activities. The workshop group is also encouraged to continue meeting as an informal support group. At the same time, work-related stressors are identified by observation and survey, then researched further and reported to management and labor representatives. Finally, a quality of worklife (QWL) intervention is offered to the client organizations based on the work-related stressors identified in the workplace.

Dianne Ward, South Carolina

Childhood and adolescent stress may be caused by bio-ecological, psychosocial, and personality factors. Bio-ecological factors, such as eating habits or deadlines, are produced from environmental relationships. Psychosocial factors, such as overcrowding or discrimination, that produce stress in young people may result during adaptation to daily experiences. Frustration increases stress levels. Personality factors that may be stress producers include low self-concept, "type A" traits, and reactive tendencies. Cognitive restructuring, biofeedback, and exercise have successfully assisted adolescents in managing stress. Kiddy-QR, or quieting reflex, is a systematic method of teaching children and teenagers to learn stress management techniques. Stress appears to be a critical element in the development of positive health habits. Smoking and drinking behaviors, obesity, and childhood diseases (asthma, diabetes, and hypertension) are negatively affected by children's inability to manage stress.

Thomas Wills, New York

A cigarette and alcohol use prevention project being conducted with more than 1,000 seventh graders in an inner-city New York City school district consists of (1) a health education curriculum taught in the classroom by science teachers, (2) a decision-skills curriculum taught by project staff in social studies classes, and (3) family communication training offered by professional staff to the students' parents. The decision-skills curriculum focuses on stress-management training, including leisure activity decisions, relaxation, and stress inoculation. Preliminary data reveal considerable stress levels in the target population, and indicate a significant relationship between stress and the students' smoking and heavy drinking. Evaluation of the program is based on pre- and posttests of health knowledge and attitudes, smoking and drinking levels, health locus of control, coping skills, and perceived stress.

Fitness

Sheldon Barr, Massachusetts

The Massachusetts Department of Health, Division of Preventive Medicine study of the prevalence of tobacco and alcohol use among Massachusetts students used information gathered from questionnaires given to approximately 5,500 10- to 18-year-olds in grades 5-12. The study was conducted as a preliminary to four Smoking and Alcohol Health Education-Risk Reduction intervention projects in Massachusetts that were funded by the Centers for Disease Control. The projects took place in 4 contrasting habitats of eastern Massachusetts: (1) a town of 18,000 in an agricultural region; (2) 3 affluent Boston suburbs; (3) 4 towns populated by blue-collar and white-collar workers; and (4) the Boston inner city, where a special bilingual program reached Chinese-American students. The critical age range for beginning smoking is 11 to 23 years old, with males starting earlier than females but with females smoking twice as much as males by grade 12. Smoking prevalence increases as scholastic grades go down.

Kathryn Dansky, Ohio

The instructional and recreational programs of the Community Health Education Center (CHEC) in Nelsonville, Ohio, target adults who live or work in the four-county area. Because Nelsonville is in the heart of Appalachian Ohio, transportation, costs, and cultural differences are often barriers to participating in health promotion programs; CHEC tries to minimize these barriers by offering personalized, low-cost services throughout our target area. Fitness programs are a major component of the project and are emphasized in all CHEC activities, including hypertension classes, smoking clinics, and stress-reduction workshops. Strategies employed in the activities and programs utilize a problem-solving approach. Individual assessment and self-directed actions are major conceptual understandings. Group and individual discussions and activities are held, and a variety of audiovisual aids are used.

Larry Fong, Idaho

The Growing Y nger Program, in conjunction with the Boise Senior Citizen Center and the Central District Health Department in the greater Boise area of Idaho, is designed to improve the health of the elderly. The project will train 2,500 elderly people from a population of about 24,000 who are over 60 years old. At the core of the educational strategies used by the program will be a grassroots, community-development methodology. Program success will depend on the ability to raise expectations and enthusiasm among volunteers and other citizens in the community. Within the information and basic session presentations, audiovisual aids, skill demonstration and development, small-group discussions, role playing, and individualized instruction through the health risk appraisal will be empha-

sized over lecture and direct information-giving approaches. Other techniques, such as behavior modification related to diet and smoking programs, were to be used.

Karen Irwin, California

San Diego County's Employee Health and Fitness Program is designed to improve the health of the county's nearly 12,000 workers at over 100 locations. A decentralized program held at various locations and offered at lunch hour or immediately after work was developed. Some sessions are offered free. The program is administered by the health education staff of the County Department of Health Services and funded by the Health Education-Risk Reduction Program of the California Department of Health Services. The program focuses on diet, exercise, smoking, and stress-management skills. The goal is for employees to learn healthy behaviors that they will continue after the program ends and to manage stress and minimize its harmful effects in their lives through stress-management techniques. The sessions cover a variety of stress-reduction techniques. All participants are given pre- and posttests to assess improvement in behaviors.

Rita Leytze, Ohio

The Physical Fitness Alternative Project of Cincinnati, Ohio, teaches junior-high-school-age students to be responsible for their own health and teaches them healthful life habits that will reduce the risks of heart disease and cancer. The project developed a 12-week curriculum covering smoking, alcohol, and physical fitness; conducted a pilot study, in which the curriculum was delivered by health educators to sixth graders; offered inservice training for health and physical education teachers and school nurses in alcohol and tobacco risk reduction and in implementation of the physical fitness alternative curriculum and methods; and expanded the project to additional schools.

Pat Crane, California

The Feel Fit Project in Orange County, California, which targets administrative management and firemen employed by the county, is designed to increase awareness of risky lifestyle practices and to help the employees decrease these risk factors. The health risk appraisal (HRA) is used as the primary assessment and motivational tool. A subcontract is held with the Santa Ana-Tustin YMCA (Young Men's Christian Association), which is located near many of the county buildings. Initial HRA appointments and consultations, fitness evaluations, and exercise programs are held at the YMCA. Participants are given a choice of referral sources. A directory of organizations for all the risk factors, compiled at the beginning of the project, is used for referrals. All participants receive a 45-minute followup counseling session on the HRA results. Those with a behavioral contract receive followup phone calls to determine their progress.

Henry A. Walden, Jr., Arizona

The Gila River Indian Community in Arizona has the highest rate of diabetes in the world; over 50 percent of the adults over age 35 are diabetic. A total of 80 percent of the population is obese, and cirrhosis was the seventh leading cause of death on the reservation from 1972 to 1975. Delivery methods of the health education-risk reduction program include a physical fitness program of supervised individual and group activities geared to all ages and a health resource center staffed by health education interns to teach the concept of wellness and healthy behaviors. To deter adolescents from smoking and alcohol use, educational programs will be aimed at grades 3, 5, and 7. An intensive peer-counseling program will also be directed at truant seventh and eighth graders. For each school group, emphasis is given to establishing role clarification, independent decision making, and goal setting. Lastly, an alternative physical fitness program will be provided for young alcoholics (18-24 years old) in the residential treatment center to reduce their stress and drinking behavior.

ISSUES OF PRACTICE

Ethics of Practice

Ruth Richards, California

Ethics should be considered in health education and risk reduction programs, from planning and implementation to followup and evaluation. When practicing ethical conduct, the patient's or client's right to know is respected; the professional looking for changed behavior has to accept that the individual can do as he or she pleases with the

information or educational experience. The use of fear techniques should be replaced with long-range educational methods that enhance personal freedom. The health professional must be careful to clarify the roles in the relationship and not impose values on patients. Other relationships to consider involve the professional agency or organization and the community (with regard to continuity, followup, and development of services) and the professional agency and the health professionals, consultants, and volunteers.

Health Risk Appraisal

Teri Dowling, California

The health hazard appraisal (HHA) used by the San Francisco Department of Health was developed by Johns Hopkins University and modified by the University of California. The department's program based on the HHA began in 1978 as a community-based, referral program offered at five district health centers. In 1981, the instrument was incorporated into a federally funded health promotion program for the workplace called the Healthy Lifestyle Programs. Experimentation with the HHA in San Francisco has shown that backup risk reduction programs and classes (e.g., smoking cessation and weight management) and individual counseling are the critical elements of any program utilizing an HHA instrument. The workplace, rather than a community setting, has proven to be an ideal setting in which to reach working adults. Efforts to provide HHA and risk reduction and counseling support in the workplace should also address the occupational health and safety of the workers. The HHA continues to be an effective introductory instrument when working with people to improve their health.

Richard Gunn, Oklahoma

Health hazard appraisal (HHA) is viewed as a keystone in the revitalization of health education by the Oklahoma State Department of Health in Oklahoma City. An HHA instrument was administered first to the department's staff, then to a diverse group at "Health Fair '81" and to members of the State legislature. With the help of the Oklahoma Occupational Medical Association, the HHA program was introduced into several companies and later expanded into several State agencies, school systems, health fairs, and hospitals. Program staff have developed a health education resource directory and provide consultation regarding followup intervention programs to client organizations. Simultaneously with the industrial component, HHA was incorporated into chronic disease screening programs; this incorporation provides base-line data for evaluation. HHA benefits from its high profile, low cost, and the public view that the health department is serving the whole population instead of only the socioeconomically deprived. The State Health Commissioner has made HHA a high priority in hopes of expanding it into a statewide, community-based health education program.

Louis A. Marciano, Rhode Island

The "Wellness Wagon," a screening and data collection program, conducts health risk assessments in Rhode Island. Using a computerized, self-assessment punch card similar to a voting ballot, the "Wellness Wagon" is able to effectively screen large numbers of people. The information on the cards can be processed quickly, and those individuals with high risk factors are interviewed and advised by a nurse educator. Followup appointments are arranged 2 months after screening for high-risk individuals (the majority of whom are men). An information booklet indicating additional sources of health references has been well received, prompting similar booklets covering other health-related subjects. In addition to serving the general public, the program is used to assess the occupational health of specific populations, such as teachers and firefighters. A screening program for adolescents is being planned. The "Wellness Wagon" program has improved the quality of health risk appraisal and has reduced screening costs.

Carol Motylewski, California

"Give Yourself a Better Chance" is the health risk profile program begun in March 1980 by the Ventura County, California, Health Care Agency. The target population consists of residents of Ventura County between 20 and 60 years of age, especially county employees and parents in the Supplemental Food Program for Women, Infants, and Children. The main objectives of the program are to (1) provide participants with health risk and nutrition risk profiles and counseling; (2) conduct risk reduction education classes; (3) develop a computerized, comprehensive nutritional risk assessment; and (4) conduct three workshops on "Nutrition Risk Assessment in Health Promotion Programs" for public health professionals. The nutrition component of the program includes a questionnaire that assesses dietary risk factors and nutritional balance; indi-

vidualized computer printouts explain to patients their risk factors and how to improve their diets. Evaluation is accomplished by monitoring participants' progress in reducing their risk factors. Funding is obtained from Federal and State sources and from user fees .

Lynn Murakami-Akatsuka, Hawaii

Ho'ola Lahui, the health education-employee health appraisal program operated by the Health Promotion and Education Office of the Hawaii Department of Health in Honolulu, helps department employees understand and reduce their risks of preventable disease and trains selected department personnel to conduct health appraisal-risk reduction programs for other State employees and the public. Administered by health educators and their staffs at regional health centers, the program uses the Health Risk Appraisal Questionnaire of the Centers for Disease Control and the locally developed Health Knowledge-Attitudes-Practices (KAP) Questionnaire. Program phases include promotion, collection of base-line survey information at the worksite, health appraisal screening, counseling, and intervention at the worksite. Counseling of participants varies in intensity according to their levels of risk. Participation in the worksite intervention phase is voluntary; priority is given to high-risk participants. Time and costs are shared between the department and its employees, pending approval by their supervisors.

Linda Redman, Virginia

The Bureau of Health Education and Information of the Virginia State Health Department in Richmond reviewed several health risk appraisal instruments before selecting, in 1979 and 1980, the questionnaire provided by the Centers for Disease Control (CDC) and the Canadian Government. In 1981, the bureau also adopted the health risk appraisal forms from St. Louis County, Minnesota, and the self-scoring "HealthStyle" test from the Office of Health Information, Health Promotion and Physical Fitness (OHP) in Washington, D.C. The Norfolk Employee Health Promotion Program was the most ambitious attempted in Virginia: the CDC-Canadian Government questionnaire was used, but coding errors compromised the data obtained. The random selection of participants resulted in a high attrition rate. At Richmond's 1980 "HealthFest," the CDC-Canadian Government instrument was distributed, results were obtained, and a directory of health education agencies was mailed to respondents. "HealthStyle" was used in 1981 and was judged easier to understand and interpret than the CDC-Canadian Government questionnaire. The Sperry-Univac project in Virginia Beach, a direct result of networking through the health education-risk reduction program, is a cooperative effort of the company and the health departments of Virginia and Minnesota. Virginia's Bureau of Health Education and Information plans to distribute health risk appraisal material prepared by OHP and to provide computerized data analysis of health risk appraisals to other health agencies.

Bernard Suttake, New Jersey

The Health Education-Risk Reduction Project of the New Jersey State Health Department in Trenton was begun in 1979 by adding a third consultant position to two existing positions in the health department. During the second year, a health risk appraisal (HRA) instrument was used as a prevalence tool until an instrument acceptable to the Center for Health Promotion and Education could be devised. The HRA was randomly distributed to households in two northern suburban and two southern rural communities. In addition, the HRA was distributed at a statewide conference of health personnel, three health fairs, and the DuPont Company. Local agencies collected the HRA's and checked for key data such as sex, age, height, weight, and smoking status. The State data-processing unit keypunched the data onto cards, which were batch processed by the Centers for Disease Control. When HRA's are used, (1) absolute confidentiality should be assured; (2) analysis of HRA's should provide the basis for health counseling; and (3) collective data should provide assistance in planning intervention activities. Use of the new prevalence tool in the same four communities should provide an opportunity to compare data obtained from the two instruments.

Inventories/Working Relationships

Mary Davis, Colorado

Cooperative relationships between health education or health promotion programs and sponsoring organizations should be approached from the standpoint of what resources are needed by the program and what the program can give sponsors in exchange for the resources. Health promotion programs can offer sponsoring organizations (1) a positive community image; (2) a way to fulfill a public service mandate (particularly for banks and public service companies); and (3) credibility for a particular consumer

product or service because of its association with public health. To ensure program success, directors should (1) define expected benefits for the health education program as well as the sponsoring organization, and ensure that these needs are met as the program progresses; (2) ensure that the program can be completed even if a sponsor withdraws; and (3) develop a memo of understanding to be signed by all parties, clarifying the responsibilities of all participants and serving as a reference throughout the project.

Ginger Everett, Missouri

A successful coordination of efforts was established between the Fulton Public School System and SERVE, Inc., a community agency. The school health education coordinator serves as a liaison between the public school system and community agencies. The director of SERVE's family planning program was interested in developing more health education programs in the schools, and was asked by the school health education coordinator to serve on a health education advisory committee. SERVE was also interested in establishing school components of its alcohol education program and a referral system between the schools and the SERVE program for adolescents with drinking problems. The school system proposed a joint effort between its health education coordinator and the director of SERVE's family counseling and alcohol education programs to provide inservice training for junior high school faculty on substance abuse. SERVE and the Fulton public schools applied jointly for a health education-risk reduction grant, and, upon acceptance, SERVE picked up one-fourth of the health education coordinator's salary. Following a school funding cut, the health education coordinator position was made a full-time SERVE position, and agreement continued between SERVE and the school system to provide health education services. Guidelines for cooperation among agencies in a rural town include (1) understanding the needs of the population; (2) identifying the values and attitudes of the community; (3) identifying sources of assistance; and (4) working with formal and informal resource systems to create a cooperative structure.

Christine Ling, Hawaii

The federally funded health education-risk reduction projects have strengthened health promotion and education programs in Hawaii. Contributing to the guaranteed continuance of the projects in Hawaii are (1) administrative commitment and support from the Hawaii State Department of Health; (2) legislative and community support; (3) qualified manpower, facilities, and matching/in-kind services and dollars; (4) support from health educators in the State Health Promotion and Education Office; and (5) the close working relationship between health educators working at the local level and the chief health promotion and education officer.

Sue Manfred, Connecticut

Connecticut's inventory of health education and risk reduction resources has been compiled into a directory entitled "Resources for Good Health." The directory combines lists and information from many sources into a resource guide that local health and social service professionals can use in referrals; assesses gaps in risk reduction services in particular towns or areas; and provides information to consumers on the types of programs available, their costs, and the personnel conducting the programs. The first five sections of the directory deal with high blood pressure screening, smoking cessation, weight reduction, exercise, and stress management. The sixth and seventh sections list descriptions as well as addresses of local, State, and national agencies working in health promotion. Each section has an introduction, which presents brief information on methods available to reduce risk of disease. Users consider the city-by-city listings of local resources the most helpful section.

James Rattray, New York

The School-Home-Industry Primary Prevention (SHIPP) Program was developed by the Corning-Painted Post School District in Corning, New York, as an intensive alcohol and tobacco education project. The program attempts to coordinate health education information from one year to the next as students move from fourth to seventh grade and to ensure that students at each grade level receive the same information. A variety of multimedia materials are employed to enhance the teacher-learner environment in the classroom, at home, in the community, and at local worksites. The theme of the program is "Get High on Life." One thousand students in grades 4-8 are made aware of the need for responsible decision making regarding alcohol and tobacco use. Emphasis is placed on the need to deal with success and failure in everyday life. Team teaching by the program director, elementary school teachers, school nurse-teachers, and eighth grade students lends a dynamic quality to the activity-oriented classes. Parents of students

enrolled in SHIPP participate by completing questionnaires and discussing their responses with their children at home and with other students in the classroom, thus broadening the base of support beyond the classroom. Long-term goals call for the program to conduct a minimum of six educational workshops for industry, health-related agencies, and community organizations.

Joan M. Wolle, Maryland

The Maryland health education-risk reduction two-phase survey covered 2,000 agencies in the State. In phase 1, local health departments, voluntary health agencies, hospitals, community colleges, and departments of education were surveyed; in phase 2, industries, proprietary groups, parks and recreation departments, and 4-year colleges were surveyed. A resource center was established as part of the Maryland State Health and Mental Hygiene Library to house data from the surveys, professional journal articles, and materials from other States. All data and information will be filed by geographic area, risk factor, target population, and other variables. Provision has been made for reference use of materials in the library, free loan of audiovisual resources, the development of individualized resource lists, and delivery of services by phone and mail and in person.

Worksite Interventions

Barbara Burkholder, New York

The Wellness in the Workplace program provides health risk reduction programs through employers in the Capital District of New York State, which includes Albany and surrounding counties. The project addresses the problems of high adult mortality from preventable diseases and is developing a comprehensive health risk reduction delivery system. The program has formed a community-based consortium of 16 agencies providing 60 different health promotion programs to adults at their worksites. Services are delivered through a consortium of providers under the direction of an advisory committee composed of risk reduction professionals, educators, employers, and consumers. The project is an outgrowth of a Health Systems Agency Task Force on Adult Wellness. Because of the reluctance of employers to start programs, free health risk appraisals and interest surveys were introduced. Funding for the wellness program was $30,000 for the first year and $37,100 for the second. One objective of the current grant year is to raise $6,000 from commissions and membership dues. Future funding is being sought from foundations, and 2 proposals have been submitted to provide services for employees in 32 State prisons. If these contracts are funded, additional staff can be employed and the service broadened.

Henrietta Gomez, Hawaii

The Employee Lifestyle Program was offered to 400 Kaiser-Permanente employees who had worked at the company for 2 or more years. Base-line information on program participants revealed that 45 percent exceeded 115 percent relative weight, and 21 percent exceeded 145 percent relative weight. Half of the women less than 40 years old and three-fourths of the women more than 40 years old did not do any strenuous exercise. Among the male participants, 37 percent less than 40 years old and half more than 40 years old did not do any strenuous exercise. The younger, better educated employees exercised more than the older, less educated employees, and the younger participants believed that they had more control over their health than did the older participants. Employees who join the program receive a health risk appraisal and complete a questionnaire. After the data are analyzed, each employee is scheduled for 1 hour of health counseling with a program counselor. Aerobic exercise, stress management, nutrition and weight reduction, and smoking cessation interventions are matched with the individual's needs. New classes and activities are announced in a newsletter, and high-risk individuals are contacted directly.

Brenda Lindemann, Massachusetts

The North Shore Planning Council's Employee Health Promotion Project is a health promotion-lifestyle program for employees of major industries and hospitals in the North Shore Health Service Area in Massachusetts. The project attracts clients through the use of an annual employer survey and through consultation teams that work with employers to explore a variety of program options, such as cardiopulmonary resuscitation instruction, stress-management classes, weight reduction classes, and hypertension screening. Programs are then planned, developed, implemented, and monitored at the worksite. Contact with a company can begin with upper or lower level management, yet in this project there was little success starting at the top. An employer may accept a program on the worksite but resist full implementation. Competing health

promotion providers may resent not being included in employer programs. Occupational health nurses should be consulted at an early stage and brought into the project; they have been a key to success in worksettings where they are employed.

Lois Dresner Merliss, Florida

The Health Education-Risk Reduction (HERR) Program in Bay County, Florida, is active at several worksites. Steps for developing an HERR program for industry include (1) collecting national data on the prevalence of risk factors such as smoking, alcohol consumption, obesity, poor nutrition, stress, lack of exercise, automobile accidents, diabetes, and hypertension; (2) establishing a commitment from the target worksite and community agencies; (3) establishing base-line data specifying preprogram employee health behavior to determine changes throughout the program; (4) planning for the program by selecting a health risk appraisal (HRA) form, advertising the program throughout the company, scheduling HRA sessions, and planning information sessions each month for reinforcement; (5) implementing all components developed in the planning sessions; (6) interpreting the data to determine which participants are at risk or at high risk; (7) implementing a lifestyle modification program through one-to-one counseling based on the participant's HRA and educational level, and offering the participant a 3-month behavioral change contract (short-term contracts specifying behavior changes to reduce risks were successful with Southern Bell employees); (8) performing 3-month follow-ups on program participants who signed behavior change contracts and providing counseling and education to all interested employees each month; and (9) evaluating the program.

Ed Miller, Maine

The Safe Woodburning Project, operated through a grant to the University of Maine Cooperative Extension Service, is a supplemental activity of the Maine Risk Reduction Project and is designed to reduce morbidity and mortality associated with unsafe burning of wood as fuel. Because the cost for other forms of energy continues to rise, a greater number of Maine citizens (more than 50 percent) are using wood as a primary or secondary source of heat. The University of Maine Cooperative Extension Service uses its service delivery network to hold workshops for all its county agents. Individual counties have developed public education initiatives such as woodburning exhibits; radio programs and newspaper columns on woodburning safety; and meetings on woodburning safety between county agents and fire department personnel, woodstove dealers, chimney sweeps, masons, social service providers, and educators. Other initiatives include design of a 4-H Program on woodburning safety that is directed at children and development of a resource center for use by the general public and the professional and technical community.

Mike Tebo, Iowa

The Iowa Health Awareness Program (IHAP) is a 2-phase worksite program that began with a target audience of 240 Iowa State Department of Health employees and is expanding to other groups. Methods include attitudinal and prevalence surveys, skills and knowledge tests, physical and medical assessments (blood pressure, resting pulse, skinfold, flexibility, the Kasch step test, and blood tests for cholesterol, triglyceride, and high-density lipoprotein levels), "lunch and learn" educational sessions, distribution of the Iowa Health Appraisal Program booklet, and support group interventions. Evaluation is conducted by using surveys, test results, risk appraisal results, and repeat physical and medical assessments. All participants are asked to take a second attitudinal and prevalence test 9 months after taking the first test. Of 133 people receiving the blood test, 34 were discovered to be borderline or at risk. After retesting, 14 people were identified as at risk and are currently in the program under a physician's care. Had their problems remained undetected, statistically at least, half would have experienced serious problems in the future. It is anticipated that within 2-3 years sufficient statistics will have been compiled to be used in negotiating lower insurance rates.

PROGRAM MAINTENANCE STRATEGIES

Block Grants

Larry Chapman, Washington

Principles of marketing can be used to enhance the competitiveness of health education-risk reduction programs in the block grant environment. Marketing targets never are stable. Each new service proposed or developed must

have a target. If target selection is erroneous, development of strategies or promotional tools will be ineffective. The decision to segment the public or to address it as a whole should be made early. Segmenting the public into targets expedites detail planning and provides a continuing scanning device. Selection of segments should follow closely the overall policy position of the organization. Cross-referencing variables should be used to improve probability of success. Value similarity is the key issue in successful marketing.

Successful Shoestring Operations

Harry Almond, Jr., Virginia

The Risk Reduction Project, a cooperative venture of the Virginia State Health Department, ADAPTS (Alcohol and Drug Abuse Prevention and Training Services), the American Cancer Society, and the Richmond public schools, is designed to provide school-based alcohol and drug abuse prevention activities in six public and two private high schools. The activities include general educational programs for administrators, faculty, students, and parents; training in affective education techniques for volunteering teachers; training of selected students as peer facilitators and training of teacher sponsors to coordinate and monitor their activities; and implementation of smoking cessation clinics in school settings. The method involves people at all levels of the school organization. The philosophy of the project is to view substance abuse as a strategy developed by individuals in response to their environment.

Kay Pfluger, Minnesota

A good example of a successful shoestring operation is the Health Risk Reduction Community Action Council, which provides impetus, direction, expertise, and resources to pilot prevention activities while encouraging the institutions served to take over the program administration in the future. With a budget of less than $50,000, project objectives have been met through such methods as bartering for services, using volunteers, and securing help from other social service agencies. In exchange for using students from local school districts as control groups for testing its health classes, the Community Action Council allows the school district to use its curriculum. Students from a local community college are offered internships in psychology, guidance counseling, and chemical dependency. Private companies or organizations provide funds or donate equipment such as office furniture. Grassroots organizations command public acceptance and trust, and people will often donate time to assist the organization's efforts.

Bruce Ragon, Ohio

Project Panther (Prevent and Neutralize Through Health Education-Risk Reduction) is a health education-risk reduction program in Youngstown, Ohio, that helps fifth and sixth graders develop skills needed to make responsible decisions about lifestyles. The project is classroom based and is presented in three phases, emphasizing affective, cognitive, and psychomotor development. Through Project Panther, a variety of creative educational experiences have been designed to augment the activity-centered classroom curriculum. Project Panther has been working closely with the Youngstown Hospital Association and the St. Elizabeth Hospital Medical Center in designing educational programs for students. These programs are designed to reduce the fear of hospitalization, increase awareness of hospital procedures, and expose the students to careers in health fields.

Ron Shone, Arizona

Thunderbird Preventive Center is a high school, on-campus, alternative center, serving approximately 15,000 students, parents, staff members, and administrators within the Thunderbird attendance zone to reduce (1) use and abuse of tobacco and alcohol and (2) truancy, delinquency, and drop-out rates. The zone includes four elementary schools and one high school. Services include research and health promotion, information and referral, and program development in the areas of alcohol and tobacco risk reduction. The project is intended to provide badly needed prevention-education and intervention facilities and programs for 14- to 19-year-old students; it is intended to be expanded to include 12- to 13-year-old students.

Generating Alternative Funding

Dee Bill, Ohio

The transfer of power to the States in determining priority health areas and subsequent funding has repercussions for many funding recipients. Alternative funding sources (i.e., besides Federal funding) have become and will continue to become the critical issue in maintaining health promo-

tion-disease prevention projects. Good places to acquire information on funding sources are the Foundation Center Libraries, which can provide resources needed to research potential funding sources and to develop a proposal. The Foundation Center operates libraries in New York, the District of Columbia, Cleveland, and San Francisco and maintains cooperating collections in all 50 States. The Center's publications include directories describing foundations and their interests; grant indexes listing and classifying recent foundation awards; and guides introducing funding research, elements of proposal writing, and related information.

Davis Mills, Minnesota

Several new sources of income have been developed to encourage health education in Minnesota. In 1976, the Minnesota State Legislature passed the Community Health Service Act, which allowed communities of 30,000 or more to create local health departments and apply for State funds to match local support. All but 1 of Minnesota's 87 counties are part of this local health department network. A second source involved coordinated voluntary agency funding. For example, Minnesota branches of the Lung Association, the American Heart Association, and the American Cancer Society have each contributed $10,000 for 3 years to provide statewide training of teachers to carry out the School Health Curriculum Project. Funding can also be derived from user fees. Finally, agency coalitions can seek foundation support. To successfully generate funding for risk reduction programs, applicants should be flexible, cooperative, persistent, and willing to join others in seeking adequate funding.

Michael Rhonehouse, Ohio

It is important when expanding the funding posture of a health education program that one identify and work with partners in the community. Whether in-kind (an exchange of labor or services between programs) or match funding (cash matching the requested funds) is obtained, add-on projects should also relate logically to the original project or the work may become disorganized. Accounting procedures should be carefully examined. The original evaluation plan should be accommodated to any new applications, so that having to prove the same issue in two or three different ways can be avoided. If the expansion grant requires a totally different evaluation format, then it may be that a separate project rather than an expansion is planned, and consequently goals, timelines, and so on may need to be reexamined before an application is made.

John Seffrin, Indiana

Operation SmART Decision is a communitywide project to deter cigarette smoking and inappropriate alcohol use among those less than 25 years old in Monroe County, Indiana. Since about 56 percent of this population are university students, the project has been organized into three phases that are designed to complement each other: a youth program, a campus program, and a community support system. The youth program is designed to teach skills needed to avoid social pressures to smoke and drink. Classroom teachers provide information, and a team from Operation SmART Decision teaches decision-making skills. University athletes and other role models interact with small groups of middle school students during the decision-making phase of the program. The campus program provides educational programs in housing units on campus. Smoking cessation programs are also offered. The community support system involves a series of activities used to reinforce project messages throughout the community. Strategies are provided for obtaining funding to keep the project operational.

Optimum Resource Coordination

Pat Hefley, Alaska

In a time of decreasing funds for health education-risk reduction (HERR) programs, project visibility is the key to cooperative efforts involving little or no expense. The visibility of HERR projects is enhanced by (1) articles in community newspapers and State public health newspapers, (2) attendance at quarterly meetings of the Alaska Health Education Consortium, and (3) attendance at meetings held by the Alaska State Department of Education and the Alaska State Department of Health and Social Services. As a result of these efforts, health educators have asked to participate in State-level data collection, computer services of other State departments have been offered for HERR program data collection, and direct labor has been offered that ranges from medical to statistical-services staff. A brief review of the health care delivery system in Alaska reveals that joint efforts have enhanced resource coordination activities within the State. Health care services and health promotion activities are shared by many organizations to serve 425,000 people. Although in many cases the

State maintains responsibility for certain types of services and the Federal Government and Native Health Corporations provide other services, there have been many shifts in these responsibilities. One area undergoing change is preventive health. Generally, the role of the State and the Native Health Corporations has increased, while the role of the Federal Government has decreased.

Julian Lipsher, Hawaii

With Federal funding for health promotion diminishing, State health education programs must become the progressive efforts of the future. A good illustration of this process is the development through the health education-risk reduction program of an inventory of State health promotion programs and services. Inventory researchers should (1) identify existing sources of information, since agencies, local information and referral programs, and others have already assembled resource directories; (2) develop human and financial resources by disseminating and promoting the accumulated resource information to additional government, community, and voluntary agencies; (3) utilize the inventory system to maintain current providers and attract new ones; (4) demonstrate the value of the inventory to supportive organizations; and (5) coordinate the resources to demonstrate that the system works well and is benefiting everyone.

Manzoor Massey, South Carolina

The overall goal of the health education-risk reduction program is to deter adolescents from using alcohol and tobacco. In order for this goal to be accomplished, a change in the target population's knowledge and attitudes about the use of alcohol and tobacco must occur. The Riverside County Department of Health utilizes the "Student Helping Student" approach, based on peer influence. It is a comprehensive approach to develop decision-making skills affecting health behavior change among adolescents. The program, by using a holistic approach, covers communication techniques, risk-taking behavior, values clarification, and decision-making skills. It also uses various community organizational activities. Peer education is a joint effort between the selected school administration and the Riverside County Health Department.

Dorothy Maysey, South Carolina

In resource coordination at the local level, there is a need to emphasize thoughtful and careful planning and a realistic assessment of money and material. Optimum resource coordination denotes the most favorable use of human and material resources to complete a particular task. Optimum resource coordination can be studied at a project level or at a systems level, which is broader and more complex in scope. The key to optimum resource coordination is thoughtful and careful planning, including a realistic assessment of the money and material (human or otherwise) needed to produce a quality product. Since health educators do not always control the initial planning, they must assess their present situation, negotiate, and utilize resources in the best manner possible.

Jim McVay, Alabama

Better coordination of health education efforts is needed at the local level. Disease prevention and health promotion should be emphasized to maximize public health resources. Obtainable objectives should be stressed at all levels to improve the cost effectiveness of existing splintered efforts. Diverse groups interested in health must better coordinate their activities because of anticipated limited Federal resources. Optimal results with limited resources can be obtained through critical internal review of existing activities and contractual services with a variety of organizations. The Alabama Department of Public Health is working with the Alabama Division of the American Cancer Society, the Alabama Department of Mental Health, and several local groups to conduct a survey on lifestyle activities by adolescents in the State. This will provide a basis to measure accomplishments of health education activities in various local areas. In the past year, Auburn University and the Tuskagee Area Health Education Center, with funds from the Alabama Department of Public Health, conducted surveys in two rural counties on the prevalence of smoking and alcohol use among adolescents.

Jane Plummer, Ohio

The "Co-ops for Health Education" were established in the fall of 1980 to promote "Healthy People" program goals and to facilitate health education strategies in order to achieve the 1990 "Objectives for the Nation." A cooperative effort of the Ohio Department of Health (ODH), the area health systems agency, and the Ohio Health Educa-

tion-Risk Reduction Program, the co-ops deal with health education strategies in school, community, workplace, and clinical settings by utilizing personnel within member agencies to provide support and coordination for programs. The co-ops overcome barriers to health education such as health education personnel shortages, lack of funding, and inaccessibility or insufficiency of resources for programs. The co-ops reach 300 local and regional agencies within a 22-county ODH service area. The area encompasses 10,898 square miles and has a population of over 1,745,000. Each regional co-op serves a four- or five-county area and has a health educator assigned to coordinate the activities and meetings. The co-ops meet quarterly for a half day in each region. Evaluation of the initial efforts of the co-ops indicates they are providing a method for channeling existing technology into the hands of local practitioners and a forum for identifying community needs in health education.

Wanda Vierthaler, Pennsylvania

Coordinating community resources at the Health Education Center (HEC) is based on a set of principles or imperatives that influence all center operations. One principle warns against overlapping services, and another stipulates against doing anything unless it is in cooperation with another agency. Thus, all HEC programs are planned and implemented to assure input from seven community systems: business, labor, and industry; communications; consumer, religious, and civic; education; government; medical care; and voluntary health. When a neighborhood with higher than average risks for death from heart disease was isolated, HEC sought Centers for Disease Control funds to reduce these risks. The services of the Allegheny County Health Department and epidemiologic research experience of the University of Pittsburgh Graduate School of Public Health were linked to the community development and health education skills at the center to generate support for the project.

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